BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,0 a Edition : 07.02.89

Replaces

Test oil : ISO-4113

Combination no. : 0 402 775 801

Injection pump

Pump designation : PES5P120A720LS7172

EP type number

: 0 412 725 805

Governor

Governor design. : RSV350...1050P0A529

Governer no. : 0 421 833 312

Customer-spec. information

Customer : DAIMLER-BENZ

Engine : 0M449 LA

1st version kW : 221.0

: 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 019

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30 : (5.15...5.35) Rack travel in mm : 20.00...21.00 Firing order : 1-3-5-4-2

Phasina : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

BASIC SETTING

1st speed rpm: 1030

Rack travel in mm : 12.90...13.00

Del.quantity cm3/: 22.9...23.2

100 s: (22.6...23.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm: 4.5...4.8 Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.3)

cm3 : 0.8Spread

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 3.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1030

Aneroid pressure h: 1500

: 229.0...232.0 Del.quantity 1000 : (226.0...235.0)

: 5.00 Spread cm3 1000 : (9.00)

RATED SPEED

1st version

Control Lever Aneroid pressure h: 750 position degrees: 50...58 Speed rpm : 700 Del.quantity cm3/: 235.0...238.0 1000 s: (232.0...241.0) Testina: 1st rack travel in: 11.90 cm3 : 8.00Spread rpm : 1090...1100 Speed 1000 s: (12.0) 2nd rack travel in: 4.00 Aneroid pressure h: 1500 : 1170...1200 : 750 Speed rpm Speed nom 4th rack travel in: 1300 Del.quantity cm3/: 251.0...254.0 Speed rom : 0.30...1.401000 s: (248.0...257.0) Spread cm3 : 8.00LOW IDLE 1 1000 s: (12.0) Control lever Aneroid pressure h: position degrees: 24...32 Speed rpm : 500 Del.quantity cm3/: 146.0...148.0 Setting point w/out bumper spring rpm : 350° 1000 s: (143.0...151.0) Rack travel in mm: 4.65 Spread cm3 : 8.00Speed : 350 rom 1000 s: (12.0) Rack travel in mm : 4.50...4.80 SET IDLE AUXILIARY SPRING BREAKAWAY Rack travel in mm : 2.00 1st version TORQUE CONTROL 1mm rack travel less than Torque control curve - 1st version rom : 1030 1st speed full load rack tr: 11.90 Rack travel in m: 12.90...13.00 Speed rpm : 1090...1100 rpm : 750 2nd speed Rack travel in m: 13.90...14.00 STARTING FUEL DELIVERY 3rd speed rpm : 875 Rack travel in m: 13.50...13.70 rpm : 100 Speed Aneroid/Altitude Del.quantity cm3/: 240.0...260.0 Compensator Test 1000 s: (236.0...264.0) Remarks: 1st version Setting Speed : 600 rom Pressure hPa : 750 Rack travel mm : 13.10...13.30 Measurement Speed $1/\min : 600$. 25,7 1st pressure hPa : 250 Rack travel in m: 10.50...10.70 2nd pressure hPa : 500 Rack travel in m: 12.20...12.40 3rd pressure hPa : 1050 Rack travel in m: 13.30...13.50 4th pressure hPa : 1500 Rack travel in m: 13.90...14.10 5th pressure hPa : -Rack travel in m: 9.50...9.90 FUEL DELIVERY CHARACTERISTICS 1st version

A02

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 12,0 c Edition : 07.02.89 Replaces : 9.9.88 Test oil : ISO-4113

Combination no. : 0 402 776 805

Injection pump

Pump designation : PES6P120A720LS7155 EP type number : 0 412 726 812

Governor

Governor design. : RSV350...1050P0A529

-1

: 0 421 833 295 Governer no.

Customer-spec. information

Customer : DAIMLER-BENZ

Engine : 0M447 LA

: 265.0 1st version kW Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35)

Rack travel in mm : 9.00...12.00

Firing order : 6-2-4-1-5-3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

rpm: 1050 1st speed

Rack travel in mm : 13.40...13.50

Del.quantity cm3/: 24.0...24.2

100 s: (23.7...24.5)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 350.0 2nd speed

Rack travel in mm: 4.5...4.8

Del.quantity cm3/: 1.4...2.0 100 s: (1.1...2.3)

cm3 : 0.8Spread

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 3.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050 Aneroid pressure h: 1400

Del.quantity : 240.0...242.0

1000 : (237.0...245.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Control lever 1st version position degrees: 50...58 Aneroid pressure h: 650 : 600 rpm Del.quantity cm3/: 234.0...237.0 1000 s: (231.0...240.0) Testina: 1st rack travel in: 12.40 rpm : 1090...1100 Spread cm3 : 8.002nd rack travel in: 4.00 1000 s: (12.0) Speed rpm : 1170...1200 4th rack travel in: 1300 Aneroid pressure h: 1400 : 825 Speed rpm Speed rpm : 0.30...1.40 Del.quantity cm3/: 263.0...266.0 1000 s: (260.0...269.0) LOW IDLE 1 Spread cm3 : 8.00Control lever 1000 s: (12.0) position degrees: 24...32 Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 151.0...154.0 1000 s: (148.0...157.0) Setting point w/out bumper spring npm : 350 Rack travel in mm: 4.65 Speed rpm Spread cm3 : 8.00Rack travel in mm : 4.50...4.80 1000 s: (12.0) SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00 **BREAKAWAY** TORQUE CONTROL 1st version Dimension a mm :-1mm rack travel less than Torque control curve - 1st version st speed rpm : 1050 Rack travel in m: 13.40...13.50 1st speed full load rack tr: 12.40 Speed rpm : 1090...1100 rpm : 825 2nd speed Rack travel in m: 14.10...14.30 STARTING FUEL DELIVERY 3rd speed rpm : 950 Rack travel in m: 13.60...13.80 Speed rpm : 100 Del.quantity cm3/ : 240.0...260.0 1000 s: (236.0...264.0) Aneroid/Altitude Compensator Test Remarks: 1st version Setting : 600 Speed rpm Pressure hPa : 650 Rack travel mm : 13.00...13.20 Measurement 1/min: 600 Speed 1st pressure hPa : 350 Rack travel in m: 10.70...10.90 2nd pressure hPa : 400 Rack travel in m: 11.40...11.60 3rd pressure hPa : 850 Rack travel in m: 13.20...13.40 4th pressure hPa : 1400 Rack travel in m: 14.30...14.50 5th pressure hPa : -Rack travel in m: 9.80...10.10

FUEL DELIVERY CHARACTERISTICS

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

: CUM 8,3 D 9 Test sheet Edition : 10.02.89 : 09.01.89 Replaces Test oil : ISO-4113

Combination no. : 0 403 436 108

Injection pump

Pump designation : PES6MW100/120RS1143

EP type number : 0 413 406 137

Governor

: RQV350...1100MW82-3 Governor design.

: 0 420 083 162 Governer no.

Cust. part no. : 3914125

Customer-spec. information Customer : CUMMINS/US

Engine : 6 CTA-830

: 186.0 1st version kW Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.6

Test Lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.05...3.15

: (3.00...3.20) Rack travel in mm : 9.00...12.00

: 1-5- 3- 6- 2- 4 Firing order

: 0-60-120-180-240-300 Phasing

Phasing

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 12.40...12.50

Del.quantity cm3/: 14.8...15.0

100 s: (14.6...15.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0 Rack travel in mm : 7.2...7.4

Del.quantity cm3/: 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.3100 s: (0.5)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1240

: 8.80...9.20 travel mm rpm : 1140 2nd speed

travel mm : 7.80...8.00

3rd speed rpm : 700

travel mm

: 3.80...4.40 : 350 : 1.20...1.60

4th speed rpm

travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 900

: 148.0...150.0 Del.quantity

: (146.0...152.0) : 3.50 1000

Spread cm3

1000 : (6.00)

RATED SPEED

1st version Control Lever

position degrees: 44...52

Testing:

1st rack travel in: 11.40

rpm : 1150...1160 Speed

2nd rack travel in: 4.00

Speed rpm : 1235...1265 4th rack travel in: 1350 Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 13...21

Setting point w/out bumper spring

rpm Rack travel in mm: 7.3

Testing:

Speed rpm : 100 Minimum rack trave: 9.30 Speed rpm : 350 Rack travel in mm : 7.20...7.40

CONSTANT REGULATION

rpm : 360...500 Speed

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 12.40...12.50 od speed rpm : 700

2nd speed

Rack travel in m: 13.20...13.30

3rd speed rpm : 1050

Rack travel in m: 12.40...12.60

4th speed rpm : 900

Rack travel in m: 12.80...13.00

Aneroid/Altitude Compensator Test

1st version

Setting Speed

rpm : 500 Pressure hPa : -

Rack travel mm : 10.20...10.30

Measurement

1/min : 500 Speed

1st pressure hPa : 300

Rack travel in m: 11.30...11.40

2nd pressure hPa : 520

Rack travel in m: 12.70...13.00

3rd pressure hPa : 900

Rack travel in m: 13.20...13.30

START CUT-OUT

Speed 1/min: 270 (280)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm : 700
Del.quantity cm3/ : 159.0...161.0
1000 s: (157.0...163.0)

Spread cm3 : 5.00 1000 s: (7.0)

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 103.0...106.0 1000 s: (101.5...107.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.40

Speed rpm : 1150...1160

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 205.0...225.0

1000 s: (202.0...228.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350 Rack travel in mm : 7.20...7.40

Del.quantity cm3/: 16.0...20.0

1000 s: (13.5...22.5) cm3 : 3.50 Spread

1000 s: (5.50)

Remarks:

Start-of-delivery mark 9° cam angle

after start of delivery cyl. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : CUM 8,3 D 7 : 10.02.89 Edition Replaces : 11.11.88 Test oil : ISO-4113 Combination no. : 0 403 436 109 Injection pump Pump designation : PES6MW100/120RS1143 : 0 413 406 137 EP type number Governor Governor design. : RQV300...1050MW82-4 : 0 420 083 168 Governer no. Cust. part no. : 3915581 Customer-spec. information Customer : CUMMINS/US Engine : 6 CTA-830 : 175.0 1st version kW Rated speed : 2100 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 047 Inlet press., bar: 1.50 Test nozzle holder assembly : 1 688 901 017 Opening : 207...210 pressure, bar Orifice plate diameter mm : 0,6 Test lines : 1 680 750 008 Outside diameter x Wall thickness

: 6.00X2.00X600

```
Test pressure, bar: 30...32
Prestroke mm
                   : 3.05...3.15
                   : (3.00...3.20)
Rack travel in mm : 9.00...12.00
Firing order
                   : 1-5-3-6-2-4
Phasing
                   : 0-60-120-180-240-300
Phasing
Tolerance + - 0
                   : 0.50 (0.75)
Time to cyl. no. : 1
BASIC SETTING
1st speed
               rpm : 1050
Rack travel in mm : 12.60...12.70
Del.quantity cm3/: 14.8...15.0
              100 s: (14.6...15.2)
Spread
              cm3 : 0.3
              100 s: (0.6)
2nd speed rpm : 300.0
Rack travel in mm : 7.7...7.9
Del.quantity cm3/: 1.6...2.0
             100 s: (1.3...2.2)
             cm3 : 0.3
Spread
             100 s: (0.5)
(B) Setting of injection pump
    with governor
GUIDE SLEEVE TRAVEL
1st speed
             rpm : 1210
                   : 9.00...9.40
  travel mm
             rpm : 1100
2nd speed
  travel mm
                  : 7.90...8.10
                 : 550
3rd speed
             rom
  travel mm
                    3.00...3.60
                    300
4th speed
             rpm
                    1.10...1.50
  travel mm
FULL LOAD DELIV. AT FULL LOAD STOP
1st version
Speed
             rpm : 1050
Aneroid pressure h: 900
Del.quantity
                  : 148.0...150.0
            1000 : (146.0...152.0)
cm3 : 3.50
Spread
            1000
                 : (6.00)
RATED SPEED
```

per values

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

x Length mm

1st version Control Lever position degrees: 42...50 Testing: 1st rack travel in: 11.60 Speed rpm : 1090...1100 2nd rack travel in: 4.00 rpm : 1185...1215 Speed 4th rack travel in: 1300 Speed rom : 0.00...1.00 LOW IDLE 1 Control lever position degrees: 10...18 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 7.8 Testing: Speed rpm : 100 Minimum rack trave: 9.30 Speed rpm : 300 Rack travel in mm : 7.70...7.90 Aneroid/Altitude Compensator Test 1st version Setting rpm : 500 Speed Pressure hPa : -Rack travel mm : 9.50...9.70 Measurement 1/min: 500 Speed 1st pressure hPa : 300 Rack travel in m: 10.80...10.90
2nd pressure hPa : 520
Rack travel in m: 11.90...12.20
3rd pressure hPa : 900 Rack travel in m: 12.60...12.70 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS

Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 78.0...80.0 1000 s: (76.0...82.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.60 rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

rpm : 100 Del.quantity cm3/: 215.0...225.0 1000 s: (212.0...228.0) Rack travel in mm: 19.00...21.00

LOW IDLE

Speed rpm : 300 Rack travel in mm : 7.70...7.90 Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5)

Spread cm3 : 3.501000 s: (5.50)

Remarks:

Start-of-delivery mark/lock = 8.0° angular displacement of the cam after start of delivery of cylinder 1.

Spread

1st version

Aneroid pressure h: 900

rpm_ : 700 Del.quantity cm3/: 145.5...148.5 1000 s: (143.0...151.0) cm3 : 5.00

1000 s: (7.0)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 6,1 F Edition : 24.02.89 Replaces : 4.86 : ISO-4113 Test oil

Combination no. : 0 403 446 151

Injection pure

Pump designation : PES6MW100/320RS1119 : 0 413 406 113

EP type number Governor

Governor design. : RQV300..1400MW58

Governer no.

: 0 420 083 080

Customer-spec. information Customer : VOLVO

: TD 61..3012 Engine

1st version kW : 113.0 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm

: 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.10...3.20 : (3.05...3.25) Prestroke mm

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 10.10...10.20

Del.quantity cm3/: 7.5...7.7

100 s: (7.3...7.9)

Spread cm3 : 0.35

100 s: (0.6)

2nd speed rpm : 300.0 Rack travel in mm: 6.5...6.6 Del.quantity cm3/: 1.6...2.0

100 s: (1.3...2.2) cm3 : 0.35Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2 rpm : 1480

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed

Del.quantity : 75.0...77.0

1000 : (73.0...79.0)

: 3.50 Spread cm3 : (6.00) 1000

RATED SPEED

1st version

Control lever

position degrees: 56...64

Testing:

1st rack travel in: 9.00

Speed rpm : 1440...1450

2nd rack travel in: 4.00

Speed rpm : 1565...1595 4th rack travel in: 1680

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

A09

position degrees: 9...17

Setting point w/out bumper spring

Speed rpm : 300 Rack travel in mm : 6.5...6.6

Testing:

rpm Speed : 100 Minimum rack trave: 8.10 rpm : 300 Speed

Rack travel in mm : 6.50...6.60

RACK STOP ADJUSTMENT

Speed rpm : 100

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.00

Speed rpm : 1440...1450

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 140.0...160.0 1000 s: (137.0...163.0) Rack travel in mm: 19.00...21.00

LOW IDLE

Speed : 300 rom

Rack travel in mm : 6.50...6.60 Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5) Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 6,1 H Edition : 03.03.89 : 29.04.88 Replaces Test oil : ISO-4113

Combination no. : 0 403 446 152

Injection pump

Pump designation : PES6MW100/320RS1119

EP type number : 0 413 406 113

Governor

Governor design. : RQV300...1400MW57

: 0 420 083 078 Governer no.

Customer-spec. information Customer : VOLVO

Engine : TD 61-3012

: 132.0 1st version kW : 2800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

: 1 680 750 014 Test lines

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.10...3.20 : (3.05...3.25) Prestroke mm

Rack travel on am : 9.00...12.00

A11

Firing order : 1-5-3-6-2-4

Phasina : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 11.40...11.50

Del.quantity cm3/: 9.0...9.2

100 s: (8.8...9.4)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 300.0 2nd speed Rack travel in mm: 6.9...7.0 Del.quantity cm3/: 1.6...2.0

100 s: (1.3...2.2) cm3 : 0.3 Spread

100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1580 1st speed

: 9.50...9.90 travel mm 2nd speed

rpm : 1450 : 8.40...8.60 travel mm

3rd speed : 550

rpm : 3.40...4.00 travel mm

4th speed : 300 rpm

: 1.20...1.60 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -2

rpm : 1480

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed

Aneroid pressure h: 505

: 90.0...92.0 Del.quantity

1000 : (88.0...94.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version Control lever position degrees: 58...66 Testing: 1st rack travel in: 10.60 Speed rpm : 1440...1450 2nd rack travel in: 4.00 Speed rpm : 1595...1625 4th rack travel in: 1725 rom : 0.10...1.00Speed LOW IDLE 1 Control lever position degrees: 12...20 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 6.9 Testing: Speed rpm : 100 Minimum rack trave: 8.50 Speed rpm : 300 Rack travel in mm : 6.90...7.00 Aneroid/Altitude Compensator Test 1st version Setting : 550 Speed rpm Pressure hPa : 445 Rack travel mm : 11.20...11.30 Measurement 1/min: 550 Speed 1st pressure hPa : -Rack travel in m: 10.10...10.20 2nd pressure hPa : 310 Rack travel in m: 10.30...10.50 3rd pressure hPa : 505 Rack travel in m: 11.40...11.50 FUEL DELIVERY CHARACTERISTICS 1st version

Aneroid pressure h: -Speed rpm : 1000 Del.quantity cm3/ : 75.0...77.0 1000 s: (73.0...79.0) RACK STOP ADJUSTMENT : 100

Speed rpm **BREAKAWAY** A12

1st version 1mm rack travel less than

full load rack tr: 10.60 Speed rpm : 1440...1450

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 140.0...160.0 1000 s: (137.0...163.0)

LOW IDLE

Speed rpm : 300 Rack travel in mm : 6.90...7.00 Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5) Spread cm3 : 3.50 1000 s: (5.00)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Note remarks : VOL 6,1 G Test sheet Edition : 03.03.89 Phasina : 0-60-120-180-240-300 Replaces : 29.04.88 Test oil : ISO-4113 Tolerance + - ° : 0.50 (0.75) Combination no. : 0 403 446 153 BASIC SETTING Injection pump 1st speed rpm: 1000 Pump designation : PES6MW100/320RS1119-Rack travel in mm : 12.00...12.10 : 0 413 406 114 EP type number Del.quantity cm3/: 10.4...10.6 Governor Governor design. : RQV300..1400MW57-1 Governer no. : 0 420 083 079 100 s: (10.3...10.9) Customer-spec. information cm3 : 0.3Spread Customer : VOLVO 100 s: (0.6) Engine : TD 61..3012 2nd speed rpm : 300.01st version kW : 150.0 Rack travel in mm: 6.3...6.4 Del.quantity cm3/: 1.6...2.0 Rated speed : 2800 100 s: (1.3...2.2) TEST BENCH REQUIREMENTS Spread cm3 : 0.3100 s: (0.5) Test oil inlet temp. °C : 38...42 (B) Setting of injection pump with governor Overflow valve : 1 417 413 000 GUIDE SLEEVE TRAVEL rpm : 1580 1st speed Inlet press., bar: 1.50 : 9.50...9.90 travel mm 2nd speed rpm : 1450 Test nozzle holder : 8.40...8.60 travel mm : 0 681 343 009 assembly 3rd speed rpm : 550 : 3.40...4.00 : 300 : 1.20...1.60 travel mm Opening | 4th speed rpm pressure, bar : 172...175 travel mm GUIDE SLEEVE POSITION Test lines : 1 680 750 014 Control-lever position Outside diameter Speed x Wall thickness x Length mm : 6.00X2.00X600 (A) Injection pump setting values

Degree: -2
Speed rpm: 1480
Rack travel in mm: 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm: 1000
Aneroid pressure h: 615
Del.quantity: 104.0...106.0
1000: (103.0...109.0)
Spread cm3: 3.50
1000: (6.00)

RATED SPEED

Insp. values in parentheses

: 3.10...3.20

: (3.05...3.25)

Set equal delivery quant.

per values

Prestroke mm

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

1st version Control lever

position degrees: 57...65

Testing:

1st rack travel in: 11.00

rpm : 1440...1450 Speed

2nd rack travel in: 4.00

Speed rpm : 1590...1620 4th rack travel in: 1700 Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 9...17

Setting point w/out bumper spring

rpm : 300 Rack travel in mm: 6.3

Testing:

Speed rpm : 100 Minimum rack trave: 7.90 rpm : 300 Speed

Rack travel in mm : 6.30...6.40

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 550 hPa : 525 Pressure

Rack travel mm : 11.80...11.90

Measurement

Speed 1/min: 550

1st pressure hPa : -

Rack travel in m: 10.10...10.20

2nd pressure hPa : 270

Rack travel in m: 10.30...10.50

3rd pressure hPa : 615

Rack travel in m: 12.00...12.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm : 1000 Speed

Del.quantity cm3/: 75.0...77.0

1000 s: (73.0...79.0)

RACK STOP ADJUSTMENT

rpm : 100 Speed

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.00

Speed rpm : 1440...1450

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 140.0...160.0 1000 s: (137.0...163.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 300 Rack travel in mm : 6.30...6.40 Del.quantity cm3/: 16.0...20.0

1000 s: (13.5...22.5)

Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

A14

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks

Test sheet Edition : RVI 8,8 Q : 07.02.89 : 30.09.88 Replaces Test oil : ISO-4113

Combination no. : 0 403 446 190

Injection pump

Pump designation : PES6MW100/320RS1154 EP type number : 0 413 406 144

Governor

Governor design. : RQV275...1250MW80 Governer no. : 0 420 083 128

Customer-spec. information Customer : RVI

Engine : MIDR 060226

1st version kW : 128.7 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 033

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina

pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.50...3.60 : (3.45...3.65) Prestroke mm Rack travel in mm : 16.50...19.50

A15

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

BASIC SETTING

rpm: 1250 1st speed

Rack travel in mm : 12.90...13.00

Del.quantity cm3/: 9.9...10.1

100 s: (9.7...10.3)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 275.0

Rack travel in mm : 6.10...6.30 Del.quantity cm3/: 2.3...2.7

100 s: (2.0...2.9) Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1475

: 9.20...9.60 travel mm rpm : 1300 2nd speed

: 7.80...8.00 travel mm

3rd speed travel mm

rpm : 500 : 3.00...3.60 rpm : 275 4th speed

: 1.00...1.40 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1300 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1250 Speed Aneroid pressure h: 800

99.5...101.5 1000 : (97.5...103.5) Del.quantity

: 3.50 cm3

Spread 1000 : (6.00)

RATED SPEED

1st version Control Lever position degrees: 48...56 Testing: 1st rack travel in: 12.00 Speed rpm: 1330...1350 2nd rack travel in: 4.00 Speed rpm : 1490...1530 4th rack travel in: 1600 Speed rom : 0.00...1.00 LOW IDLE 1 Control Lever position degrees: 12...20 Setting point w/out bumper spring Speed rpm : 275 Rack travel in mm : 6.8 Testing: Speed rpm : 200 Minimum rack trave: 7.70 Speed rpm : 275 Rack travel in mm : 6.10...6.30 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm Pressure hPa : 800 : 12.90...13.00 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 11.10...11.00 2nd pressure hPa : 200 Rack travel in m: 11.80...11.50 3rd pressure hPa : 360 Rack travel in m: 12.60...12.70 START CUT-OUT 1/min: 200 (220) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 800

rpm : 750

1000 s: (7.0)

Del.quantity cm3/: 91.5...94.5 1000 s: (89.0...97.0) Spread cm3 : 5.00

Aneroid pressure h: -

rpm : 500 Speed Del.quantity cm3/: 49.0...51.0 1000 s: (47.0...53.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 12.00 rpm : 1330...1350 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 88.0...102.0 1000 s: (85.0...105.0) Rack travel in mm : 19.50...21.00 LOW IDLE rpm : 275 Speed Rack travel in mm : 6.30...6.10 Del.quantity cm3/: 23.0...27.0 1000 s: (20.5...29.5) Spread cm3 : 3.50 1000 s: (5.00) Remarks: Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

Speed

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : IHC 7,6 S : 09.12.88 Test sheet Edition Replaces : 06.04.88 Test oil : ISO-4113 : 0 403 446 193 Combination no. Injection pump Pump designation: PES6MW100/320RS1159 EP type number : 0 413 406 146 Governor Governor design. : RQV350...1300MW72-3 Governor no. : 0 420 083 142 Customer-spec. information Customer : NAVISTAR Engine : DT-466 : 136.0 1st version kW Rated speed : 2600 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 2 417 413 037 Inlet press., bar: 2.80 Test nozzle holder assembly : 1 688 901 016 **Opening** pressure, bar : 207...210 Orifice plate diameter mm : 0,5 Test Lines : 1 680 750 008 Outside diameter x Wall thickness

: 6.00x2.00x600

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Phasing : 0-60-120-180-240-300 Tolerance + - ° : 0.50 (0.75) BASIC SETTING 1st speed rpm: 900 Rack travel in mm : 10.60...10.70 Del.quantity cm3/: 9.0...9.2 100 s: (8.8...9.4) Spread cm3 : 0.3100 s: (0.6) 2nd speed rpm : 350.0Rack travel in mm: 6.4...6.5 Del.quantity cm3/: 1.6...2.0 100 s: (1.3...2.2) cm3 : 0.3Spread 100 s: (0.5) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 1250 1st speed travel mm : 7.80...8.00 rpm : 1340 2nd speed : 8.80...9.20 travel mm rpm : 500 : 2.60...3.20 rpm : 350 3rd speed travel mm 4th speed : 1.30...1.80 travel mm FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 900 Del.quantity : 90.0...92.0 : (88.0...94.0) : 3.50 1000 Spread cm3 1000 : (6.00)RATED SPEED 1st version Control lever position degrees: 46...51

Prestroke mm

: 4.00...4.10 : (3.95...4.15)

x Length mm

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Testing:

1st rack travel in: 9.60

rpm : 1370...1390 Speed

2nd rack travel in: 4.00

Speed rpm : 1475...1485 4th rack travel in: 1550

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 11...19

Setting point w/out bumper spring

Speed rpm : 350 Rack travel in mm: 6.4

Testina:

rpm : 100 Speed

Minimum rack trave: 9.00

Speed rpm : 350 Rack travel in mm : 6.40...6.50

CONSTANT REGULATION

rpm : 370...500 Speed

START CUT-OUT

Speed 1/min: 180 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1300

Del.quantity cm3/: 94.0...98.0 1000 s: (92.0...100.0)

cm3 : 6.50 Spread 1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.60

rpm : 1370...1390 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 140.0...180.0

1000 s: (137.0...183.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

rpm : 350

Rack travel in mm : 6.40...6.50

Del.quantity cm3/: 16.0...20.0

1000 s: (13.5...22.5)

cm3 : 3.50 Spread

1000 s: (5.50)

Remarks:

Perform pump setting only with IH hose with restriction of 1.2 mm diameter.

Before checking sleeve position, first adjust latching.

In unlatched condition, do not operate greater than n = 500 1/min

Set low idle at stop screw.

Set shutoff stop 1.5...2.0 mm before shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm Note remarks : IHC 7,6 R20 : 09.12.88 : 05.08.88 Test sheet Edition Replaces Test oil : ISO-4113 Combination no. : 0 403 446 194 Injection pump Pump designation : PES6MW100/320RS1112 EP type number : 0 413 406 108 Governor Governor design. : RQV350...1300MW46-12 Governer no. : 0 420 083 143 Customer-spec. information Customer : NAVISTAR Engine : DT-466 Spread : 154.5 1st version kW : 2600 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Spread Overflow valve : 2 417 413 037 Inlet press., bar: 2.80 Test nozzle holder assembly : 1 688 901 016 Opening pressure, bar : 207...210 Orifice plate diameter mm : 0,5 Test lines : 1 680 750 008 Outside diameter Speed x Wall thickness : 6.00x2.00x600 x Length mm (A) Injection pump setting values Spread Insp. values in parentheses Set equal delivery quant.

: (3.95...4.15) Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Phasina : 0-60-120-180-240-300 Tolerance + - 0 : 0.50 (0.75) BASIC SETTING rpm: 900 1st speed Rack travel in mm : 10.80...10.90 Del.quantity cm3/: 10.3...10.5 100 s: (10.1...10.7) cm3 : 0.3100 s: (0.6) 2nd speed rpm : 350.0 Rack travel in mm : 5.5...5.6 Del.quantity cm3/ : 1.6...2.0 100 s: (1.3...2.2) cm3 : 0.3100 s: (0.5) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 1350 travel mm : 8.30...8.50 2nd speed rpm : 1460 travel mm : 9.10...9.50 rpm : 550 3rd speed : 3.10...3.70 travel mm : 350 : 1.30...1.70 4th speed rpm travel mm FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 900 Aneroid pressure h: 800 : 103.0...105.0 Del.quantity 1000 : (101.0...107.0) cm3 : 3.50 1000 : (6.00) RATED SPEED 1st version Control lever

position degrees: 44...49

: 4.00...4.10

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Testing: 1st rack travel in: 9.80 Speed rpm: 1365...1385 2nd rack travel in: 4.00 rpm : 1470...1480 Speed 4th rack travel in: 1550 Speed rpm : 0.00...1.00 LOW IDLE 1 Control lever position degrees: 9...17 Setting point w/out bumper spring Speed rpm : 350 Rack travel in mm: 5.5 Testing: Speed rpm : 100 Minimum rack trave: 7.30 rpm : 350 Rack travel in mm : 5.50...5.60 CONSTANT REGULATION rpm : 360...450 Speed Aneroid/Altitude Compensator Test 1st version Setting rpm : 500 hPa : 170 Speed rpm Pressure : 10.40...10.50 Rack travel mm Measurement $1/\min : 500$ Speed 1st pressure hPa : -Rack travel in m: 10.10...10.20 2nd pressure hPa : 230 Rack travel in m: 10.60...10.90 3rd pressure hPa : 800 Rack travel in m: 10.80...10.90 START CUT-OUT 1/min: 180 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version

Aneroid pressure h: 800 rpm : 1300 Del.quantity cm3/: 105.0...109.0 1000 s: (103.0...111.0) Spread cm3 : 5.00 1000 s: (7.9)

Speed rpm : 500 Del.quantity cm3/: 87.0...89.0 1000 s: (85.0...91.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 9.80 rpm : 1365...1385 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 140.0...180.0 1000 s: (137.0...183.0) Rack travel in mm : 19.00...21.00 LOW IDLE Speed rpm : 350 Rack travel in mm : 5.50...5.60 Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5) cm3 : 3.50 Spread 1000 s: (5.50) Remarks: Perform pump setting only with IH hose with restriction of 1.2 mm diameter. Before checking sleeve position, first adjust latching.

In unlatched condition, do not operate greater than n = 500 1/min

Set low idle at stop screw.

Set shutoff stop 1.5...2.0 mm before shutoff.

A20

Aneroid pressure h: -

BOSCH INJ. PUMP TEST SPECIFICATIONS : 4.00...4.10 : (3.95...4.15) Prestroke mm Rack travel in mm : 9.00...12.00 Note remarks Firing order : 1-5-3-6-2-4 Test sheet : IHC 7,6 R21 : 09.12.88 Edition : 19.02.88 Replaces Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 403 446 195 Tolerance + - ° : 0.50 (0.75) Injection pump BASIC SETTING Pump designation : PES6MW100/320RS1112 EP type number : 0 413 406 108 rpm: 800 1st speed Governor Governor design. : RQV350...1200MW46-13 Rack travel in mm: 12.30...12.40 : 0 420 083 144 Governer no. Del.guantity cm3/: 11.7...11.9 Customer-spec. information Customer 100 s: (11.5...12.1) : NAVISTAR Engine : DTA-466 Spread cm3 : 0.31st version kW : 180.0 100 s: (0.6) Rated speed : 2400 rpm : 350.0 2nd speed TEST BENCH REQUIREMENTS Rack travel in mm: 6.3...6.4 Del.quantity cm3/: 1.9...2.3 100 s: (1.6...2.5) cm3 : 0.3 Test oil inlet temp. °C : 38...42 Spread 100 s: (0.5) Overflow valve : 2 417 413 037 (B) Setting of injection pump with governor Inlet press., bar: 2.80 GUIDE SLEEVE TRAVEL Test nozzle holder 1st speed rpm : 1350 : 8.30...8.50 rpm : 1460 assembly : 1 688 901 016 travel mm 2nd speed Opening travel mm : 9.10...9.50 pressure, bar : 207...210 3rd speed rpm : 550 : 3.10...3.70 rpm : 350 travel mm Orifice plate 4th speed diameter mm : 0,5 : 1.30...1.70 travel mm FULL LOAD DELIV. AT FULL LOAD STOP : 1 680 750 008 1st version Speed rpm : 800 x Wall thickness Aneroid pressure h: 800 Del.quantity : 717.5...121.5)

Test lines

Outside diameter

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY Test pressure, bar: 30...32 RATED SPEED

Spread

1st version Control lever

position degrees: 43...48

cm3

: 3.50

1000 : (6.00)

Testing: 1st rack travel in: 11.30 Speed rpm : 1265...1285 2nd rack travel in: 4.00 rpm : 1395...1405 Speed 4th rack travel in: 1500 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 12...20 Setting point w/out bumper spring rpm : 350 Rack travel in mm: 6.3 Testing: rpm : 100 Speed Minimum rack trave: 9.00 rpm : 350 Speed Rack travel in mm : 6.30...6.40 CONSTANT REGULATION Speed rpm : 360...450 Aneroid/Altitude Compensator Test 1st version Settina

Speed rom : 500 hPa : 190 Pressure : 11.20...11.30 Rack travel mm Measurement

1/min: 500 Speed 1st pressure hPa : -

Rack travel in m: 10.60...10.70 2nd pressure hPa : 360 Rack travel in m: 11.90...12.20

3rd pressure hPa : 800

Rack travel in m: 12.30...12.40

START CUT-OUT

1/min: 180 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 800 rpm : 1200 Del.quantity cm3/: 120.0...124.0 1000 s: (118.0...126.0) Spread cm3: 5.00 1000 s: (7.0) Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 86.0...88.0 1000 s: (84.0...90.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.30 rpm : 1265...1285 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 140.0...180.0 1000 s: (137.0...183.0) Rack travel in mm : 19.00...21.00

LOW IDLE

rpm : 350 Speed Rack travel in mm : 6.30...6.40 Del.quantity cm3/: 19.0...23.0 1000 s: (16.5...25.5) Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

Perform pump setting only with IH hose with restriction of 1.2 mm diameter.

Before checking sleeve position, first adjust latching.

In unlatched condition, do not operate greater than n = 500 1/min

Set low idle at stop screw.

Set shutoff stop 1.5...2.0 mm before shutoff.

A22

Prestroke mm : 4.00...4.10 : (3.95...4.15) Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : IHC 7,6 R23 : 09.12.88 Test sheet Edition Replaces : 19.02.88 Test oil : ISO-4113 : 0-60-120-180-240-300 Phasing Combination no. : 0 403 446 196 Tolerance $+ - \circ : 0.50 (0.75)$ Injection pump BASIC SETTING Pump designation : PES6MW100/320RS1112 EP type number : 0 413 406 108 rpm: 800 1st speed Governor Governor design. : RQV350...1200MW46-14 Rack travel in mm : 11.40...11.50 : 0 420 083 145 Governer no. Del.quantity cm3/: 10.4...10.6 Customer-spec. information Customer : NAVISTAR 100 s: (10.2...10.8) Engine : DTA-466 Spread cm3 : 0.31st version kW : 169.0 100 s: (0.6) Rated speed : 2400 rpm : 350.0 2nd speed TEST BENCH REQUIREMENTS Rack travel in mm: 6.2...6.3 Del.quantity cm3/: 1.6...2.0 100 s: (1.3...2.2) cm3 : 0.3 Test oil inlet temp. °C : 38...42 Spread 100 s: (0.5) Overflow valve : 2 417 413 037 (B) Setting of injection pump with governor Inlet press., bar: 2.80 GUIDE SLEEVE TRAVEL Test nozzle holder rpm : 1350 1st speed : 8.30...8.50 rpm : 1460 assembly : 1 688 901 016 travel mm 2nd speed : 9.10...9.50 Opening travel mm pressure, bar : 207...210 rpm : 550 3rd speed : 3.10...3.70 rpm : 350 travel mm Orifice plate 4th speed diameter mm : 0,5 : 1.30...1.70 travel mm FULL LOAD DELIV. AT FULL LOAD STOP Test lines : 1 680 750 008 1st version Outside diameter Speed rpm : 800 x Wall thickness Aneroid pressure h: 800 x Length mm : 6.00x2.00x600 Del.quantity : 104.0...106.0 1000 : (102.0...108.0) (A) Injection pump setting values : 3.50 Spread cm3 Insp. values in parentheses 1000 : (6.00) Set equal delivery quant. per values RATED SPEED

1st version

Control lever

position degrees: 44...49

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Testina: 1st rack travel in: 10.40 rpm : 1250...1270 Speed 2nd rack travel in: 4.00 rpm : 1390...1400 Speed 4th rack travel in: 1460 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 12...20 Setting point w/out bumper spring rpm Rack travel in mm: 6.2 Testing: rpm : 100 Speed Minimum rack trave: 9.00 Speed rom Rack travel in mm : 6.20...6.30 CONSTANT REGULATION Speed : 360...450 rom Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : 180 Pressure Rack travel mm : 10.80...10.90 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 10.50...10.60 Rack travel in m: 11.40...11.50 1/min: 180 (240)

Measurement 2nd pressure hPa : 270 Rack travel in m: 11.10...11.20 3rd pressure hPa : 800 START CUT-OUT Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 800 : 1200 rpm Del.quantity cm3/: 107.0...111.0 1000 s: (105.0...113.0) cm3 : 6.50Spread 1000 s: (7.0) Aneroid pressure h: -A24

Speed rpm : 500 Del.quantity cm3/: 84.0...86.0 1000 s: (82.0...88.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.40 Speed rpm : 1250...1270

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 140.0...180.0 1000 s: (137.0...183.0) Rack travel in mm : 19.00...21.00

LOW IDLE

rpm : 350 Speed Rack travel in mm : 6.20...6.30 Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5) Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

Perform pump setting only with IH hose with restriction of 1.2 mm diameter.

Before checking sleeve position, first adjust latching.

In unlatched condition, do not operate greater than n = 500 1/min

Set low idle at stop screw.

Set shutoff stop 1.5...2.0 mm before shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS : 4.00...4.10 : (3.95...4.15) Prestroke mm Note remarks Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order : IHC 7,6 R24 : 09.12.88 Test sheet Edition : 22.04.88 Replaces Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 403 446 197 Tolerance + - 0 : 0.50 (0.75) Injection pump BASIC SETTING Pump designation : PES6MW100/320RS1112 EP type number : 0 413 406 108 1st speed rpm: 800 Governor Governor design. : RQV350...1200MW46-15 Rack travel in mm : 11.00...11.10 : 0 420 083 146 Governer no. Del.quantity cm3/: 9.9...10.1 Customer-spec. information Customer : NAVISTAR 100 s: (9.7...10.3) Engine : DTA-466 Spread cm3 : 0.31st version kW : 158.0 100 s: (0.6) Rated speed : 2400 rpm : 350.02nd speed Rack travel in mm : 6.3...6.4 Del.quantity cm3/ : 1.9...2.3 TEST BENCH REQUIREMENTS 100 s: (1.6...2.5) Test oil inlet temp. °C : 38...42 Spread cm3 : 0.3100 s: (0.5) Overflow valve : 2 417 413 037 (B) Setting of injection pump with governor Inlet press., bar: 2.80 GUIDE SLEEVE TRAVEL Test nozzle holder 1st speed rpm : 1350 : 1 688 901 016 assembly : 8.30...8.50 travel mm 2nd speed : 1460 rpm Openina . : 9.10...9.50 travel mm : 207...210 pressure, bar 3rd speed rpm : 550 travel mm : 3.10...3.70 Orifice plate 4th speed 350 rpm diameter mm : 0,5 : 1.30...1.70 travel mm FULL LOAD DELIV. AT FULL LOAD STOP Test lines : 1 680 750 008 1st version Outside diameter Speed rpm : 800 x Wall thickness Aneroid pressure h: 800 x Length mm : 6.00X2,00X600 Del.quantity : 99.0...101.0 1000 : (97.0...103.0) (A) Injection pump setting values

: 3.50 Spread cm3

: (6.00) 1000

RATED SPEED

1st version Control lever

position degrees: 43...48

Insp. values in parentheses

Set equal delivery quant.

per values

Test pressure, bar: 30...32

BEGINNING OF DELIVERY

Testing: 1st rack travel in: 10.00 rpm : 1270...1290 2nd rack travel in: 4.00 4th rack travel in: 1500 Speed rm LOW IDLE 1 Control Lever position degrees: 10...18 Setting point w/out bumper spring rpm Rack travel in mm: 6.3 Testing: Speed rpm : 100 Minimum rack trave: 9.00 Speed rpm Rack travel in mm : 6.30...6.40 CONSTANT REGULATION : 360...450 Speed rom Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm Pressure hPa : 200 Rack travel mm : 10.70...10.80 Measurement Speed 1/min: 500 1st pressure hPa : -Rack travel in m: 10.40...10.50 2nd pressure hPa : 280 Rack travel in m: 10.80...11.10 3rd pressure hPa : 800 Rack travel in m: 11.00...11.10 START CUT-OUT 1/min: 180 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version

Aneroid pressure h: 800

Aneroid pressure h: -

Speed

Spread

A26

rpm : 1200

cm3 : 5.00

1000 s: (7.0)

1000 s: (99.0...107.0)

Del.quantity cm3/: 101.0...105.0

Speed rpm Del.quantity cm3/: 84.0...86.0 1000 s: (82.0...88.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.00 Speed rpm : 1270...1290 STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 140.0...180.0 1000 s: (137.0...183.0) Rack travel in mm: 19.00...21.00 LOW IDLE Speed rpm : 350 Rack travel in mm : 6.30...6.40 Del.quantity cm3/: 19.0...23.0 1000 s: (16.5...25.5) Spread cm3 : 3.50 1000 s: (5.50) Remarks: : Perform pump setting only with IH hose with restriction of 1.2 mm diameter. Before checking sleeve position, first adjust latching. In unlatched condition, do not operate greater than n = 500 1/min

Set low idle at stop screw.

Set shutoff stop 1.5...2.0 mm before shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC 7,6 T Edition : 09.12.88 Replaces : 19.02.88 Test oil : ISO-4113

: 0 403 446 198 Combination no.

Injection pump

Pump designation: PES6MW100/320RS1160

: 0 413 406 147 EP type number

Governor

Governor design. : RQV350...1200MW46-16

: 0 420 083 147 Governer no.

Customer-spec. information Customer : NAVISTAR

Engine : DTA-466

: 176.4 1st version kW Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 037

Inlet press., bar: 2.80

Test nozzle holder

: 1 688 901 016 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,5

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 4.00...4.10 : (3.95...4.15) Prestroke mm

Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 800

Rack travel in mm : 12.30...12.40

Del.quantity cm3/: 11.8...12.0

100 s: (11.6...12.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0Rack travel in mm: 6.5...6.6 Del.quantity cm3/: 1.6...2.0 100 s: (1.3...2.2)

cm3 : 0.3 100 s: (0.5) Spread

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350 travel mm : 8.30...8,50

: 1460 2nd speed rom

: 9.10...9.50 travel mm

rpm : 550 3rd speed

: 3.10...3.70 rpm : 350 travel mm

4th speed

: 1.30...1.70 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 800

Aneroid pressure h: 800

: 118.0...120.0 Del.quantity 1000 : (116.0...122.0)

: 3.50

cm3

1000 : (6.00)

RATED SPEED

Spread

1st version

Control lever

position degrees: 44...49

Testina: 1st rack travel in: 11.30 Speed rpm : 1260...1280 2nd rack travel in: 4.00 rom : 1385...1395 Speed 4th rack travel in: 1500 Speed rom : 0.00...1.00 LOW IDLE 1 Control Lever position degrees: 12...20 Setting point w/out bumper spring : 350 rpm Rack travel in mm: 6.5 Testing: Speed rpm : 100 Minimum rack trave: 9.00 rpm : 350 Rack travel in mm : 6.50...6.60 CONSTANT REGULATION rpm : 300...450 Speed Aneroid/Altitude Compensator Test 1st version Setting Speed rpm : 800 Pressure hPa : 180 Rack travel mm : 10.30...10.40 Measurement 1/min: 800 Speed

1st pressure hPa : -

Rack travel in m: 10.00...10.10

2nd pressure hPa : 480

Rack travel in m: 11.80...12.10 3rd pressure hPa : 800

Rack travel in m: 12.30...12.40

START CUT-CUT

Speed 1/min: 180 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 800 Speed rpm : 1200

Del.quantity cm3/: 120.0...124.0 1000 s: (118.0...126.0)

cm3 : 6.50

Spread 1000 s: (7.0)

Aneroid pressure h: -

Speed rpm : 800 Del.quantity cm3/: 80.0...82.0

1000 s: (78.0...84.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.30

Speed rpm : 1260...1280

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 140.0...180.0 1000 s: (137.0...183.0) Rack travel in mm : 19.00...21.00

LOW IDLE

rpm : 350 Speed

Rack travel in mm : 6.50...6.60 Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5)

Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

Perform pump setting only with IH hose with restriction of 1.2 mm diameter.

Before checking sleeve position, first adjust latching.

In unlatched condition, do not operate greater than n = 500 1/min

Set low idle at stop screw.

Set shutoff stop 1.5...2.0 mm before shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS : 4.00...4.10 : (3.95...4.15) Prestroke mm Rack travel in mm : 9.00...12.00 Note remarks Firing order : 1-5-3-6-2-4 : IHC 7,6 T 1 : 09.12.88 Test sheet Edition Replaces : 06.04.88 Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 403 446 199 Tolerance + - 0 : 0.50 (0.75) Injection pump BASIC SETTING Pump designation : PES6MW100/320RS1160 EP type number : 0 413 406 147 1st speed rpm: 800 Governor Governor design. : RQV350...1200MW46-17 Rack travel in mm: 11.30...11.40 : 0 420 083 148 Governer no. Del.guantity cm3/: 10.1...10.3 Customer-spec. information Customer : NAVISTAR 100 s: (9.9...10.5) Engine : DTA-466 Spread cm3 : 0.3: 154.5 1st version kW 100 s: (0.6) : 2400 Rated speed rpm : 350.02nd speed TEST BENCH REQUIREMENTS Rack travel in mm: 6.3...6.4 Del.quantity cm3/: 1.6...2.0 Test oil 100 s: (1.3...2.2) inlet temp. °C : 38...42 cm3 : 0.3Spread 100 s: (0.5) Overflow valve : 2 417 413 037 (B) Setting of injection pump with governor Inlet press., bar: 2.80 GUIDE SLEEVE TRAVEL Test nozzle holder 1st speed rpm : 1350 assembly : 1 688 901 016 travel mm : 8.30...8.50 2nd speed rpm : 1460 : 9.10...9.50 rpm : 550 Opening . travel mm pressure, bar : 207...210 3rd speed : 3.10...3.70 travel mm Orifice plate : 350 4th speed rpm diameter mm : 0,5 : 1.30...1.70 travel mm FULL LOAD DELIV. AT FULL LOAD STOP Test lines : 1 680 750 008 1st version Speed rpm : 800

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY Test pressure, bar: 30...32 RATED SPEED

Spread

Del.quantity

1st version Control lever

position degrees: 44...49

cm3

Aneroid pressure h: 800

: 101.0...103.0 1000 : (99.0...105.0)

: 3.50

1000 : (6.00)

Testing: 1st rack travel in: 10.30 rpm : 1260...1280 Speed 2nd rack travel in: 4.00 Speed rpm : 1375...1385 4th rack travel in: 1500 Speed rpm : 0.09...1.00LOW IDLE 1 Control Lever position degrees: 10...18 Setting point w/out bumper spring rpm : 350 Rack travel in mm: 6.3 Testing: rpm : 100 Speed Minimum rack trave: 9.00 rpm : 350 Speed Rack travel in mm : 6.30...6.40 CONSTANT REGULATION rpm : 300...450 Speed Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 LOW hPa : 190 Pressure : 10.60...10.70 Rack travel mm Measurement Speed 1/min: 500 1st pressure hPa : -Rack travel in m: 10.20...10.30 2nd pressure hPa : 290 Rack travel in m: 10.90...11.20 3rd pressure hPa : 800 Rack travel in m: 11.30...11.40 START CUT-OUT Speed 1/min: 180 (240) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 800

Speed rpm : 1200 Del.quantity cm3/ : 104.0...108.0 1000 s: (102.0...110.0)

cm3 : 6.501000 s: (7.0)

Speed rpm : 500 Del.quantity cm3/ : 75.5...77.5 1000 s: (73.5...79.5) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.30 Speed rpm : 1260...1280 STARTING FUEL DELIVERY LOW IDLE Speed rpm : 350 Rack travel in mm : 6.30...6.40 Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5) Spread cm3 : 3.50 1000 s: (5.50) Remarks: Perform pump setting only with IH hose with restriction of 1.2 mm diameter. Before checking sleeve position, first adjust latching. In unlatched condition, do not operate greater than n = 500 1/minSet low idle at stop screw.

Set shutoff stop 1.5...2.0 mm before shutoff.

Spread

Ameroid pressure h: -

BOSCH INJ. PUMP TEST SPECIFICATIONS : 4.00...4.10 Prestroke mm : (3.95...4.15) Rack travel in mm : 9.00...12.00 Note remarks : 1-5-3-6-2-4 Firina order : IHC 7,6 R25 Test sheet Edition : 09.12.88 Replaces : 27.10.88 Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 403 446 213 Tolerance + - 0 : 0.50 (0.75) Injection pump BASIC SETTING Pump designation : PES6MW100/320RS1112 EP type number : 0 413 406 108 1st speed rpm: 900 Governor Governor design. : RQV350...1300MW72-4 Rack travel in mm : 10.80...10.90 : 0 420 083 170 Governer no. Del.quantity cm3/: 10.3...10.5 Customer-spec. information Customer : NAVISTAR 100 s: (10.1...10.7) Engine : DT-466 Spread cm3 : 0.31st version kW : 154.5 100 s: (0.6) Rated speed : 2600 rpm : 350.02nd speed TEST BENCH REQUIREMENTS Rack travel in mm: 5.5...5.6 Del.quantity cm3/: 1.6...2.0 100 s: (1.3...2.2) cm3 : 0.3 Test oil inlet temp. °C : 38...42 Spread 100 s: (0.5) Overflow valve : 2 417 413 037 (B) Setting of injection pump with governor Inlet press., bar: 2.80 GUIDE SLEEVE TRAVEL Test nozzle holder 1st speed rpm : 1460 assembly : 1 688 901 016 : 9.10...9.50 travel mm rpm : 1350 2nd speed : 8.30...8.50 rpm : 550 : 3.10...3.70 rpm : 350 Opening travel mm : 207...210 pressure, bar 3rd speed travel mm Orifice plate 4th speed diameter mm : 0,5 : 1.30...1.70 travel mm FULL LOAD DELIV. AT FULL LOAD STOP Test lines : 1 680 750 008 1st version Outside diameter Speed rpm : 900 x Wall thickness Aneroid pressure h: 800 Aneroiu Del.quantity 1000 : 103.0...105.0 x Length mm : 6.00x2.00x600

: (101.0...107.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 43...51

B03

(A) Injection pump setting values

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Insp. values in parentheses

Testing:

1st rack travel in: 9.80

Speed rpm: 1365...1385 2nd rack travel in: 4.00

rpm : 1470...1480 Speed

4th rack travel in: 1600

Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever

position degrees: 9...17

Setting point w/out bumper spring

Speed rpm: 350 Rack travel in mm: 5.5

Testing:

Speed rom

Minimum rack trave: 7.30

Speed rom

Rack travel in mm : 5.50...5.60

CONSTANT REGULATION

rpm : 390...480 Speed

START CUT-OUT

1/min: 180 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 800

Speed rpm : 1300
Del.quantity cm3/: 105.0...109.0
1000 s: (103.0...111.0)

Spread cm3 : 5.00 1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.80

rpm : 1365...1385 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 140.0...180.0 1000 s: (137.0...183.0) Rack travel in mm: 19.00...21.00

LOW IDLE

rpm : 350 Speed

B04

1000 s: (5.50)

Remarks:

Perform pump setting only with IH hose with restriction of 1.2 mm diameter.

Before checking sleeve position, first adjust latching.

In unlatched condition, do not operate greater than n = 500 1/min

Set low idle at stop screw.

Set shutoff stop 1.5...2.0 mm before shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS : 4.00...4.10 Prestroke mm : (3.95...4.15) Note remarks Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Test sheet : IHC 7,6 T 2 Edition : 09.12.88 Replaces : 04.11.88 Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 403 446 214 Tolerance + - ° : 0.50 (0.75) Injection pump Time to cyl. no. : 1 Pump designation : PES6MW100/320RS1160 EP type number : 0 413 406 147 BASIC SETTING Governor Governor design. : RQV350...1300MW46-18 1st speed rpm: 900 : 0 420 083 171 Governer no. Rack travel in mm : 11.80...11.90 Customer-spec. information Customer : NAVISTAR Del.quantity cm3/: 10.8...11.0 : DTA-466 Engine 100 s: (10.6...11.2) 1st version kW : 156.0 Spread cm3 : 0.3Rated speed : 2600 100 s: (0.6) TEST BENCH REQUIREMENTS rpm : 350.02nd speed Test oil Rack travel in mm: 6.3...6.5 Del.quantity cm3/: 1.6...2.0 100 s: (1.3...2.2) Spread cm3 : 0.3 inlet temp. °C : 38...42 Overflow valve : 2 417 413 037 100 s: (0.5) Inlet press., bar: 2.80 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 016 assembly GUIDE SLEEVE TRAVEL 1st speed rpm : 1460 Openina 9.10...9.50 travel mm : 207...210 pressure, bar rpm : 13502nd speed : 8.30...8.50 travel mm Orifice plate 3rd speed rpm : 550 diameter mm : 0,5 : 3.10...3.70 travel mm : 350 4th speed rom : 1.30...1.70 travel mm Test lines : 1 680 750 008 FULL LOAD DELIV. AT FULL LOAD STOP Outside diameter x Wall thickness 1st version x Length mm : 6.00X2.00X600 rpm : 900 Speed Aneroid pressure h: 800 Aneron p. Del.quantity 1000 : 108.0...110.0 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. : (106.0...112.0) : 3.50

Spread

RATED SPEED

1st version

cm3

1000 : (6.00)

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Control lever

position degrees: 42...50

Testina:

1st rack travel in: 10.80

Speed rpm : 1355...1375

2nd rack travel in: 4.00

rpm : 1475...1485 Speed

4th rack travel in: 1600

Speed rpm : 0.00...1.00

LOW IDLE 1 Control Lever

position degrees: 8...16

Setting point w/out bumper spring

rpm : 350 Rack travel in mm: 6.4

Testing:

: 100 Speed rom Minimum rack trave: 9.00 : 350 rpm

Rack travel in mm : 6.30...6.50

CONSTANT REGULATION

rpm : 300...450 Speed

Aneroid/Altitude Compensator Test

1st version

Settina

Speed : 500 rom hPa : 800 Pressure

Rack travel mm : 11.80...11.90

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.10...10.20

2nd pressure hPa : 165

Rack travel in m: 10.60...10.70

3rd pressure hPa : 360

Rack travel in m: 11.20...11.50

START CUT-OUT

Speed 1/min: 180 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 800 rpm : 1300 Speed

Del.quantity cm3/: 111.5...114.5 1000 s: (109.0...117.0)

cm3 : 5.00 1000 s: (7.0) Spread

Aneroid pressure h: -

rpm_ : 500 Speed

Del.quantity cm3/: 73.0...75.0 1000 s: (71.0...77.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.80

rpm : 1355...1375 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 140.0...180.0 1000 s: (137.0...183.0)

Rack travel in mm : 19.00...21.00

LOW TDLE

Speed rpm : 350 Rack travel in mm : 6.30...6.50 Del.quantity cm3/: 16.0...20.0

1000 s: (13.5...22.5)

cm3 : 3.50 Spread

1000 s: (5.50)

Remarks:

Perform pump setting only with IH hose with restriction of 1.2 mm diameter.

Before checking sleeve position, first adjust latching.

In unlatched condition, do not operate greater than n = 500 1/min

Set low idle at stop screw.

Set shutoff stop 1.5...2.0 mm before shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 D 61 Edition : 24.02.89

Replaces

Test oil : ISO-4113

Combination no. : 0 403 446 215

Injection pump

Pump designation : PES6MW100/720RS1131

EP type number : 0 413 406 123

Governor

Governor design. : RQV300...1300MW50-5

: 0 420 083 187 Governer no.

Customer-spec. information

Customer : DB

: OM 366 LA Engine

1st version kW : 146.0 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

: 172...175 pressure, bar

Test lines : 1 680 715 015

Outside diameter

x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.70...3.80 Prestroke mm : (3.65...3.75)

Rack travel in mm : 9.00...12.00

907

Firing order : 1-5-3-6-2-4

Phasina : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

BASIC SETTING

rpm: 13001st speed

Rack travel in mm : 12.00...12.10

Del.quantity cm3/: 8.9...9.1

100 s: (8.7...9.3)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 300.02nd speed Rack travel in mm: 6.0...6.2 Del.quantity cm3/: 0.7...1.1

100 s: (0.4...1.3)

Spread cm3 : 0.3100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rom: 1450

: 9.50...9.90 rpm : 1350 travel mm

2nd speed

travel mm : 8.50...8.70

rpm : 500 3rd speed

: 2.70...3.30 travel mm

rpm : 300 4th speed

travel mm : 1.20...1.60

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1300 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300 Aneroid pressure h: 700

Del.quantity : 89.0...91.0 1000 : (87.0...93.0)

: 3.50 Spread cm3

: (6.00) 1000

RATED SPEED

1st version Control Lever position degrees: 51...59 Testina: 1st rack travel in: 11.00 Speed rpm : 1340...1350 2nd rack travel in: 4.00 rpm : 1440...1470 Speed 4th rack travel in: 1550 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 14...22 Setting point w/out bumper spring rom : 300 Rack travel in mm: 6.1 Testina: Speed rpm : 100 Minimum rack trave: 7.80 Speed rpm : 300 Rack travel in mm : 6.00...6.20 Aneroid/Altitude Compensator Test 1st version Setting rpm : 500 hPa : 300 mm : 11.70...11.80 Speed rpm Pressure Rack travel mm Measurement 1/min : 500 Speed 1st pressure hPa : -Rack travel in m: 10.60...10.70
2nd pressure hPa : 230
Rack travel in m: 10.90...11.20
3rd pressure hPa : 700 Rack travel in m: 12.00...12.10 START CUT-OUT 1/min : 200 (230) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 rpm : 600 Speed Del.quantity cm3/: 74.0...77.0 1000 s: (71.5...79.5) cm3 : 5.00Spread

1000 s: (7.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 51.0...53.0 1000 s: (49.0...55.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.00 rpm : 1340...1350 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 83.0...93.0 1000 s: (80.0...96.0)

LOW IDLE

Speed rpm : 300 Rack travel in mm : 6.00...6.20 Del.quantity cm3/ : 7.0...11.0 1000 s: (4.5...13.5) cm3 : 3.50Spread 1000 s: (5.50)

Remarks:

B08

Note remarks

Test sheet : MB 6,0 D 55 Edition : 07.02.89

Replaces

Test oil : ISO-4113

Combination no. : 0 403 446 216

Injection pump

Pump designation : PES6MW100/720RS1144-

EP type number : 0 413 406 159

Governor

Governor design. : RQV300...1400MW48-8

Governer no. : 0 420 083 175

Customer-spec. information

Customer : DB

Engine : 0M 366 A

1st version kW : 125.0 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 715 015

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60

: (3.45...3.65)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasina : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1400

Rack travel in mm : 10.70...10.80

Del.quantity cm3/: 7.5...7.7

100 s: (7.3...7.9)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rom : 300.0Rack travel in mm: 8.5...8.7 Del.quantity cm3/: 0.9...1.3

100 s: (0.6...1.5)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1550

: 9.10...9.50 travel mm

rpm : 1450 2nd speed

: 8.30...8.50 travel mm

3rd speed rpm :

500 2.50...3.10 travel mm

rpm : 3004th speed

: 1.00...1.40 travel mm

GUIDE SLEEVE POSITION Control-Lever position

Degree: -1 rpm : 1430 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

: 75.0...77.0 Del.quantity

1000 : (73.0...79.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version Control Lever position degrees: 49...57 Testina: 1st rack travel in: 9.70 Speed rpm : 1440...1450 2nd rack travel in: 4.00 Speed rpm : 1535...1565 4th rack travel in: 1650 Speed rom : 0.00...1.00LOW IDLE 1 Control lever position degrees: 18...26 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 8.6 Testing: Speed rpm : 100 Minimum rack trave: 10.00 Speed rpm: 300 Rack travel in mm: 8.50...8.70 TORQUE CONTROL Dimension a mm : 1.50 Torque control curve - 1st version 1st speed rpm : 1400 Rack travel in m: 10.70...10.80 2nd speed rpm : 750 Rack travel in m: 12.20...12.30 3rd speed rpm : 950 Rack travel in m: 11.70...11.90 4th speed rpm : 1200 Rack travel in m: 10.80...11.10 START CUT-OUT 1/min : 200 (230) Speed FUEL DELIVERY CHARACTERISTICS 1st version : 750 Speed rpm Del.quantity cm3/: 74.5...77.5 1000 s: (72.0...80.0) cm3 : 5.00Spread 1000 s: (7.0) **BREAKAWAY** 1st version 1mm rack travel less than

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 78.0...88.0 1000 s: (75.0...91.0)

LOW IDLE

Speed rpm: 300 Rack travel in mm: 8.50...8.70 Del.quantity cm3/: 9.0...13.0 1000 s: (6.5...15.5) Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

B10

Speed

full load rack tr: 9.70

rpm : 1440...1450

Note remarks

Test sheet Edition : MB 6,0 0 56 : 22.12.88

Replaces

Test oil : ISO-4113

Combination no. : 0 403 446 217

Injection pump

Pump designation : PES6MW100/720RS1144-

EP type number : 0 413 406 159

Governor

Governor design. : RQV300...1300MW48-9

Governer no. : 0 420 083 176

Customer-spec. information

Customer : DB

Engine : 0M366A

: 125.0 1st version kW Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.70...3.80 Prestroke mm

: (3.65,...3.85)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 11.00...11.10

Del.quantity cm3/: 7.7...7.9

100 s: (7.5...8.1)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0 Rack travel in mm : 7.8...8.0 Del.quantity cm3/: 0.9...1.3

100 s: (0.6...1.5)

Spread cm3 : 0.3100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1440 1st speed

: 9.30...9.70 travel mm

rpm : 1350 2nd speed

travel mm : 8.60...8.80

3rd speed 500 rpm

: 2.70...3.30 : 300 travel mm

4th speed rpm

: 1.20...1.60 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1350 Speed

Rack travel in mm: 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1300 Speed

: 77.0...79.0 Del.quantity 1000 : (75.0...81.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version Control lever position degrees: 48...56 Testing: 1st rack travel in: 10.00 Speed rpm : 1340...1350 2nd rack travel in: 4.00 Speed rpm : 1425...1455 4th rack travel in: 1550 Speed rpm : 0.00...1.00 LOW IDLE 1 Control Lever position degrees: 18...26 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 7.9 Testina: Speed rpm : 100 Minimum rack trave: 9.50 Speed rpm : 300 Rack travel in mm : 7.80...8.00 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1300 Rack travel in m: 11.00...11.10 2nd speed rpm : 800 Rack travel in m: 11.50...11.80

3rd speed rpm : 585

Rack travel in m: 12.00...12.20

4th speed rpm : 1100

Rack travel in m: 11.00...11.20 START CUT-OUT 1/min: 230 (250) Speed FUEL DELIVERY CHARACTERISTICS 1st version rpm : 800 Speed Del.quantity cm3/: 75.5...78.5 1000 s: (73.0...81.0) cm3 : 5.00 Spread 1000 s: (7.0) Speed rpm : 585 Del.quantity cm3/ : 68.5...71.5 1000 s: (66.0...74.0) **BREAKAWAY** 1st version 1mm rack travel less than

Speed rpm : 1340...1350 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 78.0...88.0 1000 s: (75.0...91.0) LOW IDLE rpm : 300 Speed Rack travel in mm: 7.80...8.00 Del.quantity cm3/: 9.0...13.0 1000 s: (6.5...15.5) cm3 : 3.50 Spread 1000 s: (5.50) Remarks: :

B12

full load rack tr: 10.00

Note remarks

Test sheet : MB 6,0 D 59 Edition : 07.02.89

Replaces

: ISO-4113 Test oil

Combination no. : 0 403 446 219

Injection pump

Pump designation : PES6MW100/720RS1120

EP type number : 0 413 406 112

Governor

Governor design. : RQV300...1300MW59-1

: 0 420 083 181 Governer no.

Customer-spec. information

Customer : DB

Engine : 0M366LA

1st version kW : 141.7 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60 : (3.45...3.65) Rack travel in mm : 9.00...12.00

B13

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1300

Rack travel in mm : 12.10...12.20

Del.quantity cm3/: 8.6...8.8

100 s: (8.4...9.0)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 300.02nd speed Rack travel in mm: 6.0...6.2 Del.quantity cm3/: 0.9...1.3

100 s: (0.7...1.5) cm3 : 0.3Spread

100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1460 travel mm

: 9.50...9.90 : 1350 2nd speed rpm

: 8.50...8.70 travel mm

3rd speed : 500 rpm

: 2.70...3.30 rpm : 300 travel mm

4th speed

travel mm : 0.70...1.10

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1325 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300 Aneroid pressure h: 700

Del.quantity : 86.0...88.0

1000 : (84.0...90.0)

Spread : 3.50 cm3

1000 : (6.00)

RATED SPEED

1st version Control Lever position degrees: 51...59 Testina: 1st rack travel in: 11.10 rpm : 1340...1350 Speed 2nd rack travel in: 4.00 rom : 1450...1480 Speed 4th rack travel in: 1530 rpm : 0.00...1.00Speed LOW IDLE 1 Control Lever position degrees: 14...22 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 6.1 Testina: Speed : 100 MON Minimum rack trave: 7.60 rpm : 300 Rack travel in mm: 6.00...6.20 CONSTANT REGULATION Speed rpm : 320...550 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm hPa : 310 Pressure : 11.80...11.90 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 11.00...11.10 2nd pressure hPa : 280 Rack travel in m: 11.20...11.50 3rd pressure hPa : 700 Rack travel in m: 12.10...12.20 START CUT-OUT Speed 1/min: 230 (250) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 rpm : 750 Speed Del.quantity cm3/: 75.5...78.5 1000 s: (73.0...81.0)

Spread cm3 : 5.001000 s: (7.0) Aneroid pressure h: -Speed rpm: 500
Del.quantity cm3/: 47.0...49.0
1000 s: (45.0...51.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.10 Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 83.0...93.0 1000 s: (80.0...96.0)

LOW IDLE

Speed rpm : 300 Rack travel in mm : 6.00...6.20 Del.quantity cm3/: 9.0...13.0 1000 s: (7.0...15.0) Spread

cm3 : 3.501000 s: (5.50)

Remarks:

B14

Note remarks

: MTU 22,4 e Test sheet Edition : 2.3.89

Replaces

Test oil : ISO-4113

Combination no. : 0 406 036 027

Injection pump

Pump designation : PE6ZWM120/410/3RS28/

EP type number : 0 416 026 002

Governor

Governor design. : RQU300/700ZWA42L Governer no. : 0 422 404 010

Customer-spec. information Customer

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 40...45

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 443 022

Openina

pressure, bar : 172...175

Test lines : 1 680 750 027

Outside diameter x Wall thickness

: 8,00x2,00x1500 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

: 2.00...2.10 : (1.95...2.15) Prestroke mm

Rack travel in mm: 12.00

Firing order : 1-5-3-6-2-4 Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 00.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 600

Rack travel in mm: 18.00

Del.quantity cm3/: 33.6...34.2

100 s: (33.3...34.5)

cm3 : 1.0Spread

100 s: (1.5)

rpm : 600 2nd speed Rack travel in mm: 6.00 Del.quantity cm3/: 7.9...9.9

100 s: (7.5...10.3)

Spread cm3 : 1.1

100 s: (1.6) rpm : 250 3rd speed Rack travel in mm: 6.00

Del.quantity cm3/: 4.0...5.6 100 s: (3.6...6.0)

Spread cm3 : 1.0

100 s: (1.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: 55...61 rpm : 450

Speed Rack travel in mm: 22.00

RATED SPEED

1st version

Setting point:

Speed rom Rack travel in mm: 22.0

Testing:

1st rack travel in: 21.00 Speed rpm : 705...720 2nd rack travel in: 4.00

Speed rpm : 765...795 4th rack travel in: 810

Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

rpm : 300 Rack travel in mm: 7.00

Testing:

Speed rpm : 225 Minimum rack trave: 12.00

Speed rpm: 375
Rack travel in mm: 2.00...3.50
Rack travel in mm: 2.75
Speed rpm: 355...395
Speed rpm: 700
Mayimum rack *payor: 2.00 Maximum rack trave: 2.00 Rack travel in mm : <0.01 Speed rpm : 720...740

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 21.00 Speed rpm : 705...720

Remarks:

Full-load delivery is set on engine according to engine test report.

Stamp dimension "O". Control-rod travel "O" corresponds to 1.0 mm clearance of the control-collar capsule from the end-face stop plate.

Note remarks

: MTU 31,7 j Test sheet Edition : 3.3.89

Replaces

Test oil : ISO-4113

Combination no. : 0 406 038 999

Injection pump

Pump designation : PEV8ZWM160/120RS1040

EP type number : 0 416 068 999

Governor

: RQU425...600/1300ZWA Governor design.

62-2

: 0 422 405 020 Governer no.

Customer-spec. information Customer : MTU

Engine : MB 871

TEST BENCH REQUIREMENTS

Test oil

Outlet temp, °C : 42...45

Overflow valve

Overflow

quantity min. 1/h: 600...720

Test nozzle holder

assembly : 0 681 443 022

Openina

pressure, bar : 172...175

Test Lines : 1 680 750 069

Outside diameter x Wall thickness

x Length mm : 8,00x2,00x1500

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Prestroke mm : 2.50...2.60

: (2.45...2.65)

Rack travel in mm: 12.00

Firing order : 8-2-1-6-4-3-5-7 Phasing : 0-45-90-135-180-225-270-315

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm: 9.00

Del.quantity cm3/: 26.5...27.9 *

100 s: (26.2...28.2)

cm3 : 1.6 Spread

100 s: (2.4)

rpm : 425 2nd speed

Rack travel in mm : 6.30...6.50 Del.quantity cm3/: 8.0...9.0

100 s: (-)

Spread cm3 : 1.6 100 s: (-)

1st speed rpm : 1300

Rack travel in mm : 9.00 Del.quantity cm3/ : 25.1..26.5**

100 s: (24.8...26.8

Spread cm3 : 1.6100 s: (2.4)

2nd speed rpm : 425

Rack travel in mm : 6.30...6.50 Del.quantity cm3/: 6.4...7.4

100 s: (-)

cm3 : 1.6 100 s: (-) Spread

GUIDE SLEEVE POSITION Control-lever position

Degree: 45...55 rpm : 800 Speed

Rack travel in mm : 12.00...12.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1300 Speed

: 450.0...454.0 * Del.quantity

1000 : (447.0...457.0)

Spread : 8.0 cm3

1000 : (12.0)

2nd version

Speed rpm : 1300 Del.quantity cm3/ : 436.0...440.0** 1000 s: (433.0...443.0)

Spread

cm3 : 8.0 1000 s: (12.0)

RATED SPEED

1st version

Control lever position degrees: 52...58

Testing:

1st rack travel in: 13.80

Speed rpm : 1325...1340

2nd rack travel in: 4.00

Speed rpm : 1420...1460

3rd rack travel in: <0.01

Speed rpm : 1460...1520

LOW IDLE 1

Control lever

position degrees: 13...19

Setting point w/out bumper spring

Speed rpm: 425

Rack travel in mm : 6.50...6.70

Speed rpm : 300

Rack travel in mm : 11.00...12.00

Rack travel in mm : 3.70

Speed rpm : 480...520

Rack travel in mm : <0.01

Speed rpm : 540...615

CONSTANT REGULATION

Speed rpm : 800...1300

BREAKAWAY

1st version

Speed rpm : 1325...1380

Remarks:

* = Bank A = cyl. 1-3-6-8

** = Bank B = cyl. 2-4-5-7

Note mounting and test instructions KH/VSK 40 JP 1.

Set with adjusting gauge KDEP 1533.

Inlet pressure 3 bar with overflow quantity 10...12 1/min (measured at return).

Instead of oveflow valve, connect a hand valve of minimum nominal size 1/2" into the return.

1/2" into the return.
Oveflow quantity as well as inlet
pressure must be observed precisely.
Note further that the calibrating—

oil temperature 42°...45° C must be measured at the return.

Set intermediate-speed stop at 00 1/min

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Note remarks

Test sheet : DEE 7,6 j : 3.3.89 Edition : 7.86 Replaces Test oil : ISO-4113

Combination no. : 9 400 230 047

Injection pump

Pump designation : PES6A95D410RS2561

Governor

Governor design.: RSV600...1100A2B2049

Customer-spec. information Customer : JOHN DEERE

Engine : 6466 T

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 413 385 007

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 008

Outside diameter x Wall thickness

: 6,00x2,00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

: 1.85...1.95 Prestroke mm : (1.80...2.00)

Rack travel in mm: 10.50

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1100 1st speed

Rack travel in mm : 10.70...10.80

Del.quantity cm3/: 10.7...10.9

100 s: (10.4...11.2)

cm3 : 0.3Spread

100 s: (-)

2nd speed rpm : 600

Rack travel in mm : 5.00...5.20

Del.quantity cm3/: 1.2...1.6

100 s: (1.0...1.8)

cm3 : 0.3 Spread 100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

: 107.0...109.0 Del.quantity

1000 : (104.0...112.0)

Spread cm3 : 3.0

1000 : (-)

RATED SPEED

1st version

Control Lever

position degrees: 44...52

Testing:

1st rack travel in: 9.70 Speed rpm : 1145...1155

2nd rack travel in: 4.00

Speed rpm : 1200...1230

4th rack travel in: 1300

Speed rpm : 0.30...1.70

LOW IDLE 1 Control Lever

position degrees: 25...33 Setting point w/out bumper spring

Speed rom : 600 Rack travel in mm: 4.6

Testing:

Speed rpm : 100 Minimum rack trave: 19.00

Speed rpm : 600
Rack travel in mm : 5.00...5.20
Rack travel in mm : 2.00
Speed rpm : 720...780

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 10.70...10.80

2nd speed rpm : 950

Rack travel in m: 11.45...11.65

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm

Del.quantity cm3/: 120.0...124.0 1000 s: (118.0...126.0)

cm3 : 3.0Spread 1000 s: (-)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.70

rpm : 1145...1155 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 165.0...185.0 1000 s: (-)

Rack travel in mm: 21.00

HIGH IDLE

1st version

rpm : 1200 Speed

Rack travel in mm : 19.0...29.0

Del.quantity cm3/: (-)

LOW IDLE

Speed rpm : 600 Del.quantity cm3/ : 12.0...16.0

1000 s: (-)

Remarks:

: JOHN DEERE # RE10473

Start-of-delivery mark = 15.5° after

start of delivery cyl. 1.

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in

full-load delivery with torque-control

spring retainer.

Note remarks

Test sheet : CUM 8,3 b 6 Edition : 3.3.89

Replaces

Test oil : ISO-4113

Combination no. : 9 400 230 092

Injection pump

Pump designation : PES6A100D320/3RS2691

Governor

Governor design. : RQV350...1100AB1216R

Customer-spec. information Customer : CDC

Engine : 6 CT 8.3

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6,00x2,00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 10.50

Firing order : 1-5-3-6-2-4 Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 12.70...12.80

Del.quantity cm3/: 12.7...12.9

100 s: (12.5...13.1)

Spread cm3 : 0.35

100 s: (0.6)

2nd speed rpm : 350 Rack travel in mm : 5.70...5.90

Del.quantity cm3/: 1.6...2.0

100 s: (-)

cm3 : 0.35Spread

100 s: (0.55)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 600

Aneroid p. 527.0...127.0

Del.quantity : 127.0...127.0

1000 : (125.0...131.0)

Soread cm3 : 3.5

1000 : (6.0)

RATED SPEED

1st version

Control lever

position degrees: 61.5...66.5

Testing:

1st rack travel in: 11.70

Speed rpm: 1150...1160 2nd rack travel in: 4.00

Speed rpm : 1265...1295 4th rack travel in: 1350

rpm : 0.00...1.00Speed

LOW IDLE 1

Control lever

position degrees: 12...20

Setting point w/out bumper spring

Speed rpm : 350 Rack travel in mm : 5.8 Speed rpm : 350

Rack travel in mm : 5.70...5.90

Rack travel in mm : 2.00 Speed man : 525...585

TORQUE CONTROL

Dimension a mm :?

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 12.70...12.80

2nd speed rpm : 850

Rack travel in m: 12.90...13.10 3rd speed rpm : 750

Rack travel in m: 13.10...13.30

Aneroid/Altitude Compensator Test

1st version Setting

Speed rpm : 500 Pressure hPa : 340

Rack travel mm : 12.35...12.45

Measurement

Speed 1/min: 500

1st pressure hPa : -

Rack travel in m: 9.80....10.00

2nd pressure hPa : 190

Rack travel in m: 10.60...11.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 600

Speed rpm : 750 Del.quantity cm3/ : 133.0...137.0

1000 s: (131.0...139.0)

Spread cm3 : 3.51000 s: (6.0)

Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm3/: 69.5...73.5
1000 s: (67.5...75.5)
Spread cm3 : 3.5
1000 s: (-)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.70

Speed rpm : 1150...1160

STARTING FUEL DELIVERY

rpm : 100 Speed Del.quantity cm3/: 160.0

1000 s: (155.0)

Rack travel in mm : 21.00

LOW IDLE

Speed rpm : 350 Del.quantity cm3/ : 16.0...20.0 1000 s: (13.5...22.5)

Spread cm3 : 3.51000 s: (-)

Remarks:

Adjust stop lever to 0.5...1.0 mm before stop.

Start-of-delivery mark 9° cam angle after start of delivery cyl. 1.

Note remarks

Test sheet : CUM 8,3 j Edition : 01.09.88 Replaces : 15.6.88 Test oil : ISO-4113

Combination no. : 9 400 230 096

Injection pump

Pump designation : PES6A100D320/3RS2691

: 9 410 230 025 EP type number

Governor

Governor design. : RSV425...900A4C2213-

1R

: 9 420 234 136 Governer no.

Customer-spec. information Customer : C.D.C.

Engine : 6 CTI-8.3 L

: 154.0 1st version kW : 1800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Opening.

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values _

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 10.50

: 1-5- 3- 6- 2- 4 Firing order

Phasina : 0-60-120-180-240-300

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 830

Rack travel in mm : 13.40...13.50

Del.guantity cm3/: 13.5...13.7

100 s: (13.3...13.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 425.0 Rack travel in mm : 5.5...5.7

Del.quantity cm3/: 1.2...1.6

100 s: (0.9...1.8)

cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION

Speed rpm : 800 Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 830

Del.quantity : 135.0...137.0

: (133.0...139.0) : 3.50 1000

Spread cm3

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 49...57

Testing:

1st rack travel in: 12.40 Speed rpm : 925...935

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2nd rack travel in: 4.00 rpm : 960...990 Speed 4th rack travel in: 1030 Speed rpm : 0.30...1.40

LOW IDLE 1 Control lever

position degrees: 24...32 Setting point w/out bumper spring

Speed rpm : 425 Rack travel in mm : 5.0

Testing:

Speed : 100 rpm Minimum rack trave: 19.00 Speed rpm : 425

Rack travel in mm : 5.40...5.60

Rack travel in mm: 2.00 rpm : 435...495 Speed

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.40 rpm : 925...935 Speed

STARTING FUEL DELIVERY

Speed rom : 100

Del.quantity cm3/: 135.0...155.0 1000 s: (130.0...160.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 425
Rack travel in mm : 5.50...5.70
Del.quantity cm3/ : 12.0...16.0
1000 s: (9.5...18.5)

Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

: C.D.C # 3908844

Set shutoff stop 1.5...2.0 mm before shutoff.

Start-of-delivery mark at 10° cam rotation angle after start of delivery, cylinder 1

APPLICATION

Generator

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : CUM 8,3 j 1 Edition : 15.06.88 Replaces Test oil : ISO-4113 Combination no. : 9 400 230 0960A Injection pump Pump designation : PES6A100D320/3RS2691 EP type number : 9 410 230 025 Governor : RSV425...900A4C2213-Governor design. 1R Governer no. : 9 420 234 136 Cust. part no. : 3908845 Customer-spec. information Customer : C.D.C.

Engine : 6CT-I

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 017

Opening |

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY Test pressure, bar: 27...29 Prestroke mm : 2.80...2.90 : (2.75...2.95) Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 750

Rack travel in mm : 14.00...14.10

Del.quantity cm3/: 14.2...14.4

100 s: (14.0...14.6)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 425.0 2nd speed Rack travel in mm : 6.0...6.2 Del.quantity cm3/ : 1.8...2.2

100 s: (1.5...2.4)

cm3 : 0.3Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-Lever position Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

: 142.5...144.5 Del.quantity : (140.5...146.5) 1000

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version Control Lever

position degrees: 37...45

Testina:

1st rack travel in: 13.00

Speed : 795...805 rpm 2nd rack travel in: 4.00 rpm : 825...855 Speed 3rd rack travel in: 4.00 rpm : 830...860 Speed LOW IDLE 1 Control lever position degrees: 19...27 Setting point w/out bumper spring Speed rpm : 425 Rack travel in mm : 5.6 Testing: Speed : 100 rpm Minimum rack trave: 19.00 rpm : 425 Rack travel in mm: 6.00...6.20 Rack travel in mm: 2.00 ": 440...500 Speed rpm **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 13.00 Speed rpm : 795...805 STARTING FUEL DELIVERY Speed : 100 rpm Del.quantity cm3/: 135.0...155.0 1000 s: (130.0...160.0) Rack travel in mm: 19.00...21.00 LOW IDLE Speed rpm : 425
Rack travel in mm : 6.00...6.20
Del.quantity cm3/ : 18.0...22.0
1000 s: (15.5...24.5) cm3 : 3.50Spread 1000 s: (5.50) Remarks: Start-of-delivery mark at 10° cam rotation angle after start of delivery, cylinder 1 Adjust stop lever to 0.5...1.0 mm before stop. **APPLICATION**

B26

Generator

Note remarks

Test sheet : CUM 8,3 k Edition : 15.06.88 Replaces

Test oil : ISO-4113

Combination no. : 9 400 230 102

Injection pump

Pump designation : PES6A100D320/3RS2691

EP type number : 9 410 230 025

Governor

Governor design. : RSV400...1050A0c2216

: 9 420 234 146 Governer no.

Customer-spec. information Customer : C.D.C.

Engine : 6 CTA 8.3

1st version kW : 141.7 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Opening .

pressure, bar : 207...210

Orifice plate

diameter mm : 0.6

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.80...2.90 Prestroke mm : (2.75...2.95)

Rack travel in mm : 10.50...10.50 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

rpm: 1050 1st speed

Rack travel in mm : 11.10...11.20

Del.quantity cm3/: 10.0...10.2

100 s: (9.8...10.4)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 400.0 2nd speed Rack travel in mm : 5.9...6.1 Del.quantity cm3/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed

: 100.5...102.5 Del.quantity

: (98.5...104.5) : 3.50 1000

Spread cm3

> : (6.00) 1000

RATED SPEED

1st version Control lever

position degrees: 43...51

Testing:

B27

1st rack travel in: 10.10 Speed rpm : 1090...1100 2nd rack travel in: 4.00

Speed rpm : 1160...1190 4th rack travel in: 1250

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control Lever

position degrees: 25...34 Setting point w/out bumper spring

rpm : 400 Rack travel in mm: 5.5

Testina:

Speed rpm : 100 Minimum rack trave: 19.00 Speed : 400 rpm

Rack travel in mm : 5.90...6.10

Rack travel in mm : 2.00

Speed rom : 495...555

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1050

Rack travel in m: 11.10...11.20

2nd speed rpm : 750

Rack travel in m: 12.60...12.80

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750 Del.quantity cm3/ : 126.0...130.0 1000 s: (124.0...132.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.10

Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm

Del.quantity cm3/: 135.0...155.0 1000 s: (130.0...160.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

rpm : 400 Speed

Rack travel in mm : 5.90...6.10 Del.quantity cm3/: 18.0...22.0 1000 s: (15.5...24.5)

Spread

cm3 : 3.50 1000 s: (5.50)

Remarks:

Adjust stop lever to 0.5...1.0 mm before stop.

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Start-of-delivery mark 11° cam angle after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : CUM 8,3 b Edition : 20.12.88 Replaces : 1.9.88 Test oil : ISO-4113 Combination no. : 9 400 230 103 Injection pump Pump designation : PES6A1000410RS2691-2 EP type number : 9 410 230 028 Governor Governor design. : RQV350...1100AB1227R Governer no. : 9 420 231 015 Customer-spec. information Customer : C.D.C. Engine : 6 CT 8.3 1st version kW : 156.6 : 2200 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 047 Inlet press., bar: 1.50 Test nozzle holder assembly : 1 688 901 017 Opening pressure, bar : 207...210 Orifice plate diameter mm : 0,6 Test lines : 1 680 750 014 Outside diameter x Wall thickness x Length mm : 6.00X2.00X600

Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

(A) Injection pump setting values

Prestroke mm : 2.80...2.90 : (2.75...2.95) Rack travel in mm : 10.50 : 1-5-3-6-2-4 Firing order Phasing : 0-60-120-180-240-300 Tolerance + - 0 : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 1100 Rack travel in mm : 12.80...12.90 Del.quantity cm3/: 13.0...13.2 100 s: (12.8...13.4) Spread cm3 : 0.3100 s: (0.6) 2nd speed rpm : 350.0 Rack travel in mm : 5.6...5.8 Del.quantity cm3/ : 1.8...2.2 100 s: (1.5...2.4) Spread cm3 : 0.3100 s: (0.5) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 1100 travel mm : 7.70...7.70 : 1150 2nd speed rom : 8.00...8.60 travel mm 3rd speed : 1290 rpm travel mm : 9.50...10.10 4th speed 350 rpm 1.20...1.60 travel mm 5th speed : 600 rpm : 3.90...4.50 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1290 Speed Rack travel in mm : 6.70...9.30 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1100 Aneroid pressure h: 900

: 130.5...132.5 1000 : (128.5...134.5) Del.quantity Spread : 3.50 cm3 1000 : (6.00) RATED SPEED 1st version Control lever position degrees: 60...68 Testing: 1st rack travel in: 11.80 rpm : 1150...1160 Speed 2nd rack travel in: 4.00 rpm : 1265...1295 Speed 4th rack travel in: 1350 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 9...17 Testing: : 250 Speed rpm Minimum rack trave: 8.00 rpm : 350 Speed

Rack travel in mm: 5.60...5.80 Rack travel in mm: 2.00 rpm : 420...480 Speed

Aneroid/Altitude Compensator Test

1st version Setting Speed : 500 **COM** hPa : 900 Pressure : 12.80...12.90 Rack travel mm

Measurement 1/min: 500 Speed

1st pressure hPa : -Rack travel in m: 10.10...10.30 2nd pressure hPa : 535 Rack travel in m: 12.10...12.20

3rd pressure hPa : 390
Rack travel in m: 10.70...11.10

START CUT-OUT

1/min: 260 (280) Speed

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: - Speed rpm

Del.quantity cm3/: 79.0...83.0

1000 s: (77.0...85.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.80

rpm : 1150...1160 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 165.0...185.0 1000 s: (160.0...190.0) Rack travel in mm : 15.30...15.70

LOW IDLE

Speed rpm : 350 Rack travel in mm : 5.60...5.80 Del.quantity cm3/: 18.0...22.0 1000 s: (15.5...24.5) Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

: CDC # 3912645

Adjust stop lever to 0.5...1.0 mm before stop.

Start-of-delivery mark is at 7° after start of delivery.

CO2

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks

: CUM 8,3 k 1 Test sheet Edition : 15.06.88 Replaces

Test oil : ISO-4113

Combination no. : 9 400 230 106

Injection pump

Pump designation : PES6A1000320/3RS2691 : 9 410 230 025

EP type number

Governor Governor design.

Governer no.

: RSV400...1050A0c2216

-1R

: 9 420 234 154

Customer-spec. information Customer : C.D.C.

: 6 CT 8.3 Engine

1st version kW : 141.7 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Openina .

pressure, bar : 207...210

Orifice plate

: 0,6 diameter mm

Test Lines : 1 680 750 014

Outside diameter

x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.80...2.90 Prestroke mm : (2.75...2.95)

Rack travel in mm : 10.50...10.50 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rom : 1050

Rack travel in mm : 11.90...12.00

Del.quantity cm3/: 11.5...11.7

100 s: (11.3...11.9)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 400.0 2nd speed Rack travel in mm : 5.8...6.0 Del.quantity cm3/ : 1.6...2.0 100 s: (1.3...2.2)

cm3 : 0.3 Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x:?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Speed Del.quantity 1000 : 115.0...117.0 : (113.0...119.0)

: 3.50 Spread cm3

: (6.00) 1000

RATED SPEED

1st version Control Lever

position degrees: 42...50

Testing:

C03

1st rack travel in: 10.90 rpm : 1090...1100 Speed 2nd rack travel in: 4.00 Speed rpm : 1145...1175 4th rack travel in: 1200

LOW IDLE 1

Control lever position degrees: 23...31 Setting point w/out bumper spring rpm : 400

rpm : 0.30...1.40

Rack travel in mm: 5.4

Testina: Speed

Speed

: 100 rpm Minimum rack trave: 19.00 Speed rpm : 400 Rack travel in mm : 5.80...6.00 Rack travel in mm : 2.00 Speed : 470...530 rom

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1050

Rack travel in m: 11.90...12.00

2nd speed nom : 750

Rack travel in m: 13.20...13.40

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750 Del.quantity cm3/: 134.0...138.0

1000 s: (132.0...140.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.90 Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 135.0...155.0 1000 s: (132.0...158.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400

Rack travel in mm : 5.80...6.00 Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5)

cm3 : 3.50 1000 s: (5.50) Spread

Remarks:

Adjust stop lever to 0.5...1.0 mm before stop.

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Start-of-delivery mark 11° cam angle after start of delivery cyl. 1

Note remarks

Test sheet : CUM 8,3 a 6 Edition : 20.12.88 : 30.9.88 Replaces Test oil : ISO-4113

Combination no. : 9 400 230 109

Injection pump

Pump designation : PES6A100D320/3RS2691

: 9 410 230 030 EP type number

Governor

: RSV450...1100A2C2190 Governor design.

-21R

: 9 420 234 164 Governer no.

Customer-spec. information Customer : C.D.C.

Engine : 6CT830

1st version kW : 117.1 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 017

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm

: 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 10.50

Firing order

: 1-5-3-6-2-4

Phasing

: 0-60-120-180-240-300

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 10.20...10.30

Del.guantity cm3/: 8.9...9.1

100 s: (8.7...9.3)

Spread

cm3 : 0.3

100 s: (0.6)

rpm : 450.0 2nd speed

Rack travel in mm : 5.7...5.9 Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

: 89.0...91.0 Del.quantity

1000 : (87.0...93.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 47...55

Testing:

CO5

1st rack travel in: 9.20 rpm : 1140...1150 Speed 2nd rack travel in: 4.00 Speed rpm : 1190...1220

3rd rack travel in: 4.00 rpm : 1195...1225 Speed

4th rack travel in: 1300

Speed rpm : 0.30...1.40

LOW IDLE 1 Control Lever

position degrees: 29...37

Setting point w/out bumper spring

rpm : 450 Rack travel in mm: 5.3

Testing:

Speed rpm : 100 Minimum rack trave: 19.00

Speed rpm: 450
Rack travel in mm: 5.70...5.90
Rack travel in mm: 2.00

rpm : 525...585

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 10.20...10.30

2nd speed rpm : 750

Rack travel in m: 10.80...11.00

FUEL DELIVERY CHARACTERISTICS

1st version

rpm_ : 750 Speed

Del.quantity cm3/: 90.5...94.5 1000 s: (88.5...96.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.20

Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 135.0...155.0

1000 s: (130.0...160.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 450 Rack travel in mm : 5.70...5.90

CO6

Del.quantity cm3/: 16.0...20.0

1000 s: (13.5...22.5)

Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

: C.D.C. # 3911541

Adjustment without torque-control spring retainer with 0,5 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Start-of-delivery mark 11° cam angle after start of delivery cyl. 1

Note remarks

Test sheet : CUM 8,3 a 7
Edition : 20.12.88
Replaces : 30.9.88
Test oil : ISO-4113

Combination no. : 9 400 230 110

Injection pump

Pump designation : PES6A1000320/3RS2691

EP type number : 9 410 230 030

Governor

Governor design. : RSV450...1100A0C2190

-22R

Governer no. : 9 420 234 173

Customer—spec. information Customer : C.D.C.

Engine : 6CT830

1st version kW : 150.6 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 017

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 014

Outside diameter

x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 10.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Phasing

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 12.10...12.20

Del.quantity cm3/: 11.8...12.0

100 s: (11.6...12.2)

Spread cm3: 0.3

100 s: (0.6)

2nd speed rpm : 450.0

Rack travel in mm : 5.7...5.9 Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2) cm3 : 0.3

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm: 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1100

Del.quantity : 118.5...120.5

1000 : (116.5...122.5)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 42...50

Testina:

1st rack travel in: 11.10

Speed rpm : 1140...1150

2nd rack travel in: 4.00

rpm : 1195...1225 Speed

4th rack travel in: 1300

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 22...30

Setting point w/out bumper spring

rpm : 450 Rack travel in mm: 5.3

Testina:

rpm : 100 Speed Minimum rack trave: 19.00

Speed rpm: 450
Rack travel in mm: 5.70...5.90
Rack travel in mm: 2.00

Speed : 500...560 man

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 12.10...12.20

2nd speed rpm : 750

Rack travel in m: 13.20...13.40

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750

Del.quantity cm3/: 133.0...137.0 1000 s: (131.0...139.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.10

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 135.0...155.0 1000 s: (130.0...160.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

rpm : 450

Rack travel in mm : 5.70...5.90

Del.quantity cm3/: 16.0...20.0

1000 s: (13.5...22.5)

cm3 : 3.50 Spread

1000 s: (5.50)

Remarks:

: C.D.C. # 3911542

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control

spring retainer.

Start-of-delivery mark 11° cam angle after start of delivery cyl. 1

Limit shutoff stop screw to 1.0 mm.

Note remarks

Test sheet : CUM 8,3 a 8 Edition : 20.12.88 : 30.9.88 Replaces Test oil : ISO-4113

Combination no. : 9 400 230 111

Injection pump

Pump designation : PES6A100D320/3RS2691

EP type number : 9 410 230 030

Governor

Governor design. : RSV450...1100A0c2190

-23R

: 9 420 234 174 Governer no.

Customer-spec. information Customer : C.D.C.

Engine : 6CT830

1st version kW : 134.2 : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 017

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.80...2.90 Prestroke mm : (2.75...2.95) Rack travel in mm : 10.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Phasing

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 11.20...11.30

Del.guantity cm3/: 10.1...10.3

100 s: (9.9...10.5)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 450.0 Rack travel in mm : 5.7...5.9 Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position Degree: -3

008: mar Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 101.0....05.0)

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 49...57

CO9

Testing: 1st rack travel in: 10.20 rpm : 1140...1150 Speed

2nd rack travel in: 4.00 rpm : 1210...1240 Speed

3rd rack travel in: 4.00

Speed rpm : 1215...1245 4th rack travel in: 1300

Speed rpm : 0.30...1.40

LOW IDLE 1 Control lever

position degrees: 31...39

Setting point w/out bumper spring

rpm : 450 Rack travel in mm: 5.3

Testing:

Speed rpm : 100 Minimum rack trave: 19.00 rpm : 450 Speed

Rack travel in mm : 5.70...5.90 Rack travel in mm : 2.00

Speed rom : 535...595

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 11.20...11.30

2nd speed rpm : 750

Rack travel in m: 12.00...12.20

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750 Del.quantity cm3/ : 110.5...114.5 1000 s: (108.5...116.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.20

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

LOW IDLE

Speed rpm : 450

C10

Rack travel in mm : 5.70...5.90 Del.quantity cm3/: 16.0...20.0

1000 s: (13.5...22.5)

cm3 : 3.50 Spread 1000 s: (5.50)

Remarks:

: C.D.C. # 3911545

Adjustment without torque-control spring retainer with 0,5 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Start-of-delivery mark 17° cam angle after start of delivery cyl. 1

Limit shutoff stop screw to 1.0 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS : 2.75...2.85 : (2.70...2.90) Prestroke mm Note remarks Rack travel in mm : 10.50 : 1-5-3-6-2-4 Firing order : IHC 5,9 b : 20.12.88 : 30.9.88 Test sheet Edition Replaces Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 9 400 230 120 Tolerance + - 0 : 0.50 (0.75) Injection pump Time to cyl. no. : 1 Pump designation : PES6A95D32ORS2750 EP type number : 0 410 896 906 BASIC SETTING Governor Governor design. : RQV350...1350AB1236R 1st speed rpm : 1350: 9 420 231 021 Governer no. Rack travel in mm : 11.10...11.20 Customer-spec. information Del.quantity cm3/: 7.3...7.5 Customer : NAVISTAR Engine : MARS DTA360 100 s: (7.1...7.7) 1st version kW : 134.0 Spread cm3 : 0.3Rated speed : 2700 100 s: (0.6) TEST BENCH REQUIREMENTS 2nd speed rpm : 350.0 Rack travel in mm : 5.2...5.4 Del.quantity cm3/ : 1.5...1.9 100 s: (1.2...2.1) Test oil inlet temp. °C : 38...42 Overflow valve cm3 : 0.3Spread : 2 417 413 038 100 s: (0.5) Inlet press., bar: 2.80 (B) Setting of injection pump with governor Test nozzle holder assembly : 1 688 901 110 GUIDE SLEEVE TRAVEL 1st speed rom : 1400 : 8.50...8.50 rpm : 1500 Opening travel mm pressure, bar : 250...253 2nd speed : 9.30...9.50 travel mm Orifice plate 3rd speed rpm : 350 diameter mm : 0,5 : 1.00...1.00 travel mm 4th speed rpm : 450 travel mm : 1.90...2.40 Test Lines : 1 680 750 008 rpm : 250 5th speed : 0.10...0.50 travel mm x Wall thickness

Outside diameter

GUIDE SLEEVE POSITION x Length mm : 6.00X2.00X600 Control-lever position

Degree: -1 (A) Injection pump setting values Speed rpm : 1535 Insp. values in parentheses Rack travel in mm : 6.70...9.30 Set equal delivery quant.

per values FULL LOAD DELIV. AT FULL LOAD STOP

BEGINNING OF DELIVERY 1st version

Test pressure, bar: 27...29 Speed rpm : 1350 Aneroid pressure h: 900

Del.quantity 73.0...75.0 1000 : (71.0...77.0) Spread : 3.50 cm3 1000 : (6.00) RATED SPEED 1st version Control lever position degrees: 45...53 Testina: 1st rack travel in: 10.10 rpm : 1415...1445 Speed 2nd rack travel in: 4.00 rpm : 1530...1540 Speed 4th rack travel in: 1600 rom : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 8...16 Testing: Speed rpm : 250 Minimum rack trave: 7.80 Speed rpm : 350 Rack travel in mm : 5.20...5.40 CONSTANT REGULATION rpm : 350...500 Speed Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : 900 Pressure : 11.10...11.20 Rack travel mm Measurement 1/min : 500 Speed 1st pressure hPa : -Rack travel in m: 8.80...9.00 2nd pressure hPa : 250 Rack travel in m: 10.00...10.10 3rd pressure hPa : 190 Rack travel in m: 9.30...9.70 START CUT-OUT Speed 1/min: 290 (300) FUEL DELIVERY CHARACTERISTICS 1st version

C12

Aneroid pressure h: Speed rpm : 500
Del.quantity cm3/: 57.0...61.0
1000 s: (55.0...63.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.10 Speed rpm : 1415...1445

STARTING FUEL DELIVERY

LOW IDLE

Remarks:

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark is at start of delivery of cylinder 1

Note remarks

Test sheet : DEE 10,1 a3 Edition : 20.12.88 Replaces : 30.9.88 : ISO-4113 Test oil

Combination no. : 9 400 231 039

Injection pump

Pump designation : PES6P110A720RS370 EP type number : 0 412 016 052

Governor

Governor design. : RSV450...1050PDA465

Governer no. : 9 420 234 180

Customer spec. information

Customer : JOHN DEERE

Engine : 6619A

1st version kW : 201.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00X3.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.75...2.85 : (2.70...2.90)

Rack travel in mm: 10.50

Firing order

: 1-5-3-6-2-4

Phasina

: 0-60-120-180-240-300

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed

rpm: 1050

Rack travel in mm : 12.40...12.50

Del.quantity cm3/: 17.4...17.6

100 s: (17.1...17.9)

Spread

cm3 : 0.4

100 s: (0.7)

rpm : 450.0 2nd speed Rack travel in mm: 6.0...6.2 Del.quantity cm3/: 1.9...2.5 100 s: (1.7...2.7)

cm3 : 0.4 100 s: (0.7) Spread

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed

Aneroid pressure h: 900 Del.quantity

: 174.0...176.0 1000 : (171.0...179.0)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 47...55

Testing:

1st rack travel in: 11.40

rpm : 1090...1100 Speed

2nd rack travel in: 4.00

C13

Speed rpm : 1220...1250 4th rack travel in: 1250

Speed : 0.30...1.40 COM

LOW IDLE 1 Control Lever

position degrees: 25...33 Setting point w/out bumper spring

npm : 450 Speed Rack travel in mm : 5.6

Testina:

Speed : 100 rom Minimum rack trave: 19.00 rpm : 450

Rack travel in mm : 6.00...6.20

Rack travel in mm: 2.00 Speed rom : 600...660

TORQUE CONTROL

Torque control curve - 1st version

rpm : 1050 1st speed

Rack travel in m: 12.40...12.50

2nd speed rom : 650

Rack travel in m: 13.60...13.80

Aneroid/Altitude Compensator Test

1st version Settina

Speed : 500 rom hPa : 900 Pressure

: 13.60...13.80 Rack travel mm

Measurement

Speed 1/min: 500

1st pressure hPa : -

Rack travel in m: 10.50...10.70 2nd pressure hPa : 280

Rack travel in m: 11.70...11.80

3rd pressure hPa : 480

Rack travel in m: 12.80...13.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 rpm : 650

Del.quantity cm3/: 198.5...201.5

1000 s: (195.0...205.0)

Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: -1000 s: (123.0...133.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.40

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 170.0...210.0 1000 s: (165.0...215.0)

Rack travel in mm: 20.00...21.00

HIGH IDLE

1st version

Speed : 1170 rpm

Rack travel in mm : 7.40...7.60

LOW IDLE

Speed rpm : 450 Rack travel in mm : 6.00...6.20 Del.quantity cm3/: 19.0...25.0 1000 s: (17.0...27.0)

Spread cm3 : 4.501000 s: (7.50)

Remarks:

: JOHN DEERE # RE29146

Starting/full-load transition speed from holding magnet = 400 1/min.

Start-of-delivery mark at control-rod travel 10.5 mm and 15° after start of delivery.

Screw in torque-control-spring retainer to make contact at 650 L/min.

Note remarks

Test sheet : DEE 7,6 g 3 20.12.88 Edition Replaces : 11.85 Test oil : ISO-4113

Combination no. : 9 400 231 084

Injection pump

Pump designation : PES6P110A720RS3083-1 : 9 410 231 027

EP type number

Governor

Governor design. : RSV425...1100P2A489

: 9 420 234 138 Governer no.

Customer-spec. information

Customer : JOHN DEFRE

: 6466 A Engine

1st version kW : 161.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 456 413 010

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening.

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00X3.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 3.45...3.55

: (3.40...3.60)

Rack travel in mm: 10.50

Phasina : 0-60-120-180-240-300

: 1-5-3-6-2-4

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 1

Firing order

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm: 12.00...12.10

Del.quantity cm3/: 13.7...13.9

100 s: (13.4...14.2)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 425.0 2nd speed Rack travel in mm: 6.4...6.6

Del.quantity cm3/: 1.0...1.5 100 s: (0.8...1.8)

cm3 : 0.4 100 s: (0.7) Spread

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed Aneroid pressure h: 900

Del.quantity : 737.3...142.5)

cm3 : 4.00 1000 : (7.50)

RATED SPEED

1st version Control lever

position degrees: 46...54

Testing:

1st rack travel in: 11.00 Speed rpm : 1155...1165 2nd rack travel in: 4.00

C15

Speed rpm : 1230...1260 3rd rack travel in: 4.00

4th rack travel in: 1350

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 21...29 Setting point w/out bumper spring

Speed rpm : 425 Rack travel in mm : 6.0

Testing:

Speed : 100 rpm Minimum rack trave: 19.00 : 425 rpm

Rack travel in mm : 6.40...6.60 Rack travel in mm : 2.00

: 655...715 Speed L.Du

TORQUE CONTROL

Torque control curve - 1st version

rpm : 1100 1st speed

Rack travel in m: 12.00...12.10

2nd speed rpm : 700

Rack travel in m: 13.10...13.30

Aneroid/Altitude Compensator Test

1st version Setting

Speed rpm Pressure

: 500 hPa : -

: 11.10...11.30 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : 200 Rack travel in m: 11.40...11.80

2nd pressure hPa : 375

Rack travel in m: 12.50...12.60

3rd pressure hPa : 900

Rack travel in m: 13.10...13.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm : 700
Del.quantity cm3/: 155.5...159.5
1000 s: (152.5...162.5)

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: -1000 s: (102.0...112.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.00

rpm : 1155...1165 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 150.0...170.0 1000 s: (145.0...175.0)

Rack travel in mm : 20.00...21.00

HIGH IDLE

1st version

Speed rpm : 1200

Rack travel in mm : 7.30...7.50

LOW IDLE

Speed rpm : 425
Rack travel in mm : 6.40...6.60
Del.quantity cm3/ : 10.5...15.5
1000 s: (8.0...18.0)

Spread cm3 : 4.50

1000 s: (7.50)

Remarks:

: JOHN DEERE # RE23748

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Starting/full-load transition speed from holding magnet = 400 1/min.

Start-of-delivery mark 13° cam angle after start of delivery cyl. 1.

Note remarks

Test sheet : IHC 9,4 a 7 : 6.3.89 Edition

Replaces

Test oil : ISO-4113

Combination no. : 9 400 231 115

Injection pump

Pump designation : PES8P100A921/5RS286

Governor

Governor design.: RQV350...1200PA643-1

Customer-spec. information

Customer

Engine : DVT 800

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 040

Inlet press., bar: 2.80

Test nozzle holder

: 1 688 901 017 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,7

Test lines : 9 681 230 713

Outside diameter x Wall thickness

x Length mm : 6,35x1,57x1025,4

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Prestroke mm : 2.70...2.80 : (2.65...2.85)

Rack travel in mm: 9.50

: 1-8-4-2-7-3-6-5 Firing order

Phasing : 0-45-90-135-180-225-

270-315

: 0.50 (0.75) Tolerance + - 0

Time to cyl. no. : 1

BASIC SETTING

1st speed rom: 1200

Rack travel in mm : 9.50...9.60

Del.quantity cm3/: 10.5...10.7

100 s: (-)

cm3 : 0.4Spread

100 s: (-)

2nd speed rpm : 350

Rack travel in mm : 4.90...5.10

Del.quantity cm3/: 1.9...2.3 100 s: (-)

cm3 : 0.5 Spread

100 s: (-)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1200 Speed Aneroid pressure h: 930 Aneroid E. Del.quantity : 1000 : (-)

: 105.5...107.5

RATED SPEED

1st version Control lever

position degrees: 59.5...64.5

Testing:

1st rack travel in: 8.50

Speed rpm : 1240...1250 2nd rack travel in: 4.00

Speed rom: 1300...1330 4th rack travel in: 1370 Speed

Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever

position degrees: 10.5...15.5 Setting point w/out bumper spring

Speed rpm : 350 Rack travel in mm : 5.0

: 350 Speed rpm Rack travel in mm : 4.80...5.20 Rack travel in mm : 2.00

: 650...710 Speed rpm Speed rpm : 285 Maximum rack trave: 7.00 CONSTANT REGULATION rpm : 400...460 Speed TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version 1st speed rpm : 1200 Rack travel in m: 9.50...9.60 2nd speed rpm : 900 Rack travel in m: 10.75...10.85 Aneroid/Altitude Compensator Test 1st version Setting Speed rpm hPa : 160 * Pressure FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 930 : 900 Speed rpm Del.quantity cm3/: 117.0...123.0 1000 s: (-) Spread cm3 : 4.0 1000 s: (-) Aneroid pressure h: -Speed rpm: 800 Del.quantity cm3/: 82.0...90.0 1000 s: (-) Spread cm3 : 4.01000 s: (-) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 8.50 Speed rpm : 1240...1250 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 199.0...239.0 1000 s: (-)

LOW IDLE

Speed

C18

rpm : 350

Rack travel in mm : 19.0...23.0

Del.quantity cm3/: (-)

Remarks:

* Start of LDA (manifold-pressure compensator) movement

APPLICATION

Tractor (tractor engines)

Note remarks

: DEE 7,6 g 4 : 20.12.88 : 17.10.88 Test sheet Edition Replaces Test oil : ISO-4113

Combination no. : 9 400 231 196

Injection pump

Pump designation : PES6P110A720RS3083 EP type number : 9 410 231 009

Governor

Governor design. : RSV400...1050P2A488-

: 9 420 234 130 Governer no.

Customer-spec. information Customer : JOHN DEERE

Engine : 6466 AF

1st version kW : 167.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x3.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 3.45...3.55

: (3.40...3.60)

C19

Rack travel in mm: 10.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 12.60...12.70

Del.quantity cm3/: 14.9...15.1

100 s: (14.7...15.4)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 400.0 Rack travel in mm : 6.6...6.8 Del.quantity cm3/ : 1.3...1.8 100 s: (1.1...2.1)

cm3 : 0.4 100 s: (0.7) Spread

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Speed rpm : 1050Aneroid pressure h: 1200

Del.quantity : 149.5...(54.0)

cm3 : 4.00 1000 : (7.50)

RATED SPEED

1st version Control lever

position degrees: 42...50

Testing:

1st rack travel in: 11.60

rpm : 1095...1105 Speed

2nd rack travel in: 4.00 rpm : 1190...1200 Speed 3rd rack travel in: 4.00 rpm : 1195...1225 Speed 4th rack travel in: 1300 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 19...27 Setting point w/out bumper spring rpm : 400° Rack travel in mm: 6.2 Testing: rpm Speed : 100 Minimum rack trave: 19.00 rpm : 400 Rack travel in mm : 6.60...6.80 Rack travel in mm : 2.00 Speed : 660...720 rpm TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version 1st speed rpm : 1050 Rack travel in m: 12.60...12.70 2nd speed rpm : 700 Rack travel in m: 13.80...14.00 Aneroid/Altitude Compensator Test

1st version Setting Speed rpm : 500 Pressure hPa : 1200 Rack travel mm : 13.80...14.00

Speed 1/min: 500

1st pressure hPa: Rack travel in m: 10.30...10.50

2nd pressure hPa: 665

Measurement

Rack travel in m: 12.90...13.00 3rd pressure hPa : 415 Rack travel in m: 11.20...11.60

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 700
Del.quantity cm3/: 180.0...185.0
1000 s: (177.5...187.5)
Aneroid pressure h: Speed rpm : 500

Del.quantity cm3/: 91.0...95.0 1000 s: (88.0...98.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.60

Speed rpm : 1095...1105

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 156.0...176.0 1000 s: (152.0...180.0) Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 6.60...6.80
Del.quantity cm3/ : 13.5...18.5
1000 s: (11.0...21.0)

Spread cm3 : 4.50 1000 s: (7.50)

Remarks:

: JOHN DEERE # RE25013

Adjustment without torque-control spring retainer with 0,5 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Start-of-delivery mark = 12,75° after start of delivery cyl. 1.

Starting/full-load transition speed from holding magnet = 400 1/min.

Note remarks

Test sheet : DEE 10,1a12 : 20.12.88 Edition

Replaces

Test oil : ISO-4113

Combination no. : 9 400 231 214

Injection pump

Pump designation : PES6P110A720RS370 EP type number : 0 412 016 052

Governor

Governor design. : RSV500...900P0/452-1

: 9 420 234 123 Governer no.

Customer-spec. information Customer : JOHN DEERE

: 6619 A Engine

1st version kW : 164.0 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x3,00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.75...2.85 Prestroke mm : (2.70...2.90)

Rack travel in mm: 10.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 900

Rack travel in mm : 11.60...11.70

Del.quantity cm3/: 16.0...16.2

100 s: (15.7...16.4)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 500.0 2nd speed Rack travel in mm: 5.9...6.1 Del.quantity cm3/: 1.9...2.5 100 s: (1.6...2.7)

Spread cm3 : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 900 Speed Aneroid pressure h: 900

Del.quantity : 160.0...162.0 1000 : (157.5...164.5)

Spread

cm3 : 4.00 1000 : (7.50)

RATED SPEED

1st version Control Lever

position degrees: 38...46

Testing:

3rd rack travel in: 6.20

C21

rpm : 985...1015 Speed 4th rack travel in: 1100

rom : 0.30...1.70Speed

LOW IDLE 1 Control lever

position degrees: 21...29 Setting point w/out bumper spring

Speed rpm : 500 Rack travel in mm : 5.5

Testing:

Speed rpm : 100 Minimum rack trave: 19.00 rpm : 500

Rack travel in mm : 5.90...6.10

Rack travel in mm : 2.00

Speed MC : 610...670

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 900

Rack travel in m: 11.60...11.70

2nd speed rpm : 650

Rack travel in m: 12.40...12.60

Aneroid/Altitude Compensator Test

1st version Setting

rom : 550 hPa : 900 Speed rpm Pressure

Rack travel mm : 12.40...12.60

Measurement

Speed 1/min: 550

1st pressure hPa : -

Rack travel in m: 10.90...11.10

2nd pressure hPa : 420

Rack travel in m: 11.40...11.50 3rd pressure hPa : 575 Rack travel in m: 12.30...12.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm : 650 Del.quantity cm3/ : 176.5...179.5 1000 s: (174.0...182.0)

Aneroid pressure h: -

Speed rpm : 550 Del.quantity cm3/ : 143.0...147.0

1000 s: (140.0...150.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.60 rpm : 945...955 Speed

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 190.0...210.0 1000 s: (185.0...215.0)

Rack travel in mm : 19.00...21.00

HIGH IDLE

1st version

rpm : 1000 Speed

Rack travel in mm : 6.10...6.30 Del.quantity cm3/: 23.5...28.5

1000 s: (21.0...31.0)

LOW IDLE

Speed rpm : 500 Rack travel in mm : 5.90...6.10 Del.quantity cm3/ : 19.0...25.0 1000 s: (16.5...27.5)

cm3 : 4.50 Spread

1000 s: (7.50)

Remarks:

: JOHN DEERE # RE21153

Start-of-delivery mark at control-rod travel 10.5 mm and 15° after start of delivery.

Screw in torque-control-spring retainer to make contact at 650 L/min.

Note inst. in remarks column

: ONA 3,4 C1 Test sheet Edition : 03.02.89

replaces

Calibrating oil : ISO 4113

: VE 6/10F1500 R209-3 Injection pump

Type number : 0 460 406 062

Customer-specific information

Customer

: ONAN

Engine

: L634TA HD

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

assembly : 1 688 901 000

Opening

bar: 147...150 pressure

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm: 840

Start of delivery

Prestroke mm : 0.2

(from BDC): +-0.02(0.04)

Injection pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1500 Speed Charge press. hPa: 800

mm: 3.8...4.2 Setting value

Supply-pump pressure:

Speed 1/min: 1500 Charge press. hPa: 800

Setting value bar: 5.1...5.7

Full-load del. with charge press.:

Speed 1/min: 1400 Charge press. hPa: 800

Del.quantity cm3/ 1000H:: 56.5...57.5 Dispersion cm3/: 3.0 1000H: -

Full-load del. w/out charge press.:

1/min : 700

Del.quantity cm3/ 1000H.: 39.5...40.5

Low-idle speed regulation:

1/min: 400 Speed Charge press. hPa: -

Del.quantity cm3/ 1000H.: 13.0...17.0

cm3/: 3.0 Dispersion 1000H.: -

Full-load speed regulation:

Speed 1/min: 1640 Charge press. hPa: 800

Del.quantity cm3/ 1000H: 10.0...14.0

Start:

1/min: 100 Speed Del.quantity cm3/1000H.: 37.0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 800 Charge press. hPa: 800

TD travel mm: 0.9...1.7 mm: (0.6...2.0)

2nd speed 1/min: 1100 Charge press. hPa: 800

mm: 2.2...2.8 mm: (1.8...3.2) TD travel

1/min: 1500 3rd speed Charge press. hPa: 800

mm: 3.8...4.2 TD travel mm: (3.3...4.7)

Supply-pump pressure characteristic:

1st speed 1/min: 700 Charge press. hPa: 800

Supply-pump	+
pressure har: 2.32.9	+ Mech. shutoff:
2nd speed 1/min: 1100	+
Charge press. hPa: 800	+ Speed 1/min: 1500
Supply-pump	+ Del.quantity_cm3/: 03
pressure bar: 3.84.4	1000H.: -
3rd speed 1/min: 1500	+
Charge press. hPa: 800	† Electr. shutoff:
Supply-pump	+
pressure bar: 5.15.7	+ Speed 1/min: 350
Overette variable	+ ELAB volt: -
Overflow quantity at overflow valve:	+ Del.quantity_cm3/: 0.03.0
1et annual 1/m²n. 700	+ max. 1000H.: -
1st speed 1/min: 700	*************
Charge press. hPa: 800 Oveflow : 4183	† Idle delivery:
	† 4.1 · · · · · · · · · · · · · · · · · · ·
quantity cm3/10s: (2698)	+ 1st speed 1/min: 350
2nd speed 1/min: 1500	Del.quantity cm3/: 26.533.5
Charge press. hPa: 800	1000H.: -
Overflow : 55138	+ 2nd speed 1/min: 400
quantity cm3/10s: (40153)	Del.quantity cm3/: 13,017,0 1000H.: (11,018,0)
Politions squart, and breakening above	† 7000H.: (11,018,0)
Delivery-quant. and breakaway char.:	3rd speed 1/min: 450
1st speed 1/mins 700	+ Del.quantity cm3/: 0,06,0 + 1000H.: -
1st speed 1/min: 700	† 1000H.: -
Charge-air pressure-setting point hPa: 400	Asstrance of the second
IDA etroka mm. 45	+ Automatic starting fuel delivery:
LDA stroke mm: 6,5 Del.quantity cm3/: 47.548.5	1 1st speed 1/min. 220
1000H.: (45,750,3)	+ 1st speed 1/min: 220
2nd speed 1/min: 1700	+ Del.quantity cm3/: - + ind. 1000H: 37.0
Charge press. hPa: 800	† 1710. 1000H: 37.0
Del.quantity cm3/: 0.06.0	T 2nd speed 1/min. 700
1000H.: -	+ 2nd speed 1/min: 300
3rd speed 1/min: 1640	+ Del.quantity cm3/: - + max. 1000H: 37.0
Charge press. hPa: 800	I max. 1000n: 57.0
Del.quantity cm3/: 10.014.0	Shutoff electromagnet:
1000H.: (8.016.0)	1 Silutori etectrollagillet.
4th speed 1/min: 1580	T Cut-in
Charge press. hPa: 800	min. voltage : 10.0
Del.quantity cm3/: 33.041.0	Rated voltage : 12.0
1000H.: -	T Marca voctage . 12.0
5th speed 1/min: 1500	+ Mounting and assembly dimensions:
Charge press. hPa: 800	Trouversity divid describely difficilisticity.
Del.quantity cm3/: 53.056.0	→ Designation
1000H.: (52.256.8)	+ K mm : -
6th speed 1/min: 1400	VE E 4 4 0
Charge press. hPa: 800	+ MS mm : 0.61.0
Del.quantity cm3/: 56.557.5	+ SVS max. mm : 1.9
1000H.: (54.759.3)	+ XK mm : 20,022,0
7th speed 1/min: 700	MS mm : 0.61.0 SVS max. mm : 1.9 XK mm : 20,022,0 XL mm : 12,415,8 Remarks:
Charge press. hPa: 800	+
Del.quantity cm3/: 56.059.0	+ Remarks:
1000H.: -	+
8th speed 1/min: 700	+
Charge press. hPa: -	+
Del.quantity cm3/: 39.540.5	+
1000H: (37.742.3)	+
	+
Zero delivery (stop):	+

Note inst. in remarks column

: CAS 3,9L Test sheet Edition : 31.01.89

replaces

Calibrating oil : ISO 4113

: VE 4/12F1100 R310-1 Injection pump

: 0 460 424 043 Type number

Customer-specific information

Customer : CASE

: 4BT -3.9 Engine

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

assembly : 1 688 901 027

Openina .

pressure bar: 250...253

Perforated-plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm : 840

Start of delivery

Prestroke mm : 0.3

(from BDC): +0.02(0.04)

Start of delivery block Piston stroke mm: 1,55 mm: +0,02(0,06)

Outlet

Injection pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 750 Charge press. hPa: 1000 Setting value mm: 3,3...3,7

Supply-pump pressure:

Speed 1/min: 750 Charge press. hPa: 1000 Setting value bar: 4,5...5,1

Full-load del. with charge press.:

Speed 1/min: 750 Charge press. hPa: 1000

Del.quantity cm3/ 1000H.: 82,5...83,5

Dispersion cm3/:4,01000H : (4,5)

Full-load del. w/out charge press.:

1/min : 500 Speed

Del.quantity cm3/ 1000H.: 49,5...50,5

Low-idle speed regulation:

1/min: 400 Speed Charge press. hPa: -

Del.quantity cm3/ 1000H.: 8,5...14,5 Dispersion cm3/: 5,5 1000H.: (7,0)

Full-load speed regulation:

1/min: 1170 Charge press. hPa: 1000

Del.quantity cm3/ 1000H: 52,0...58,0

Start:

Speed 1/min: 100 Del.quantity mind cm3/1000H.: 45,0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500 Charge press. hPa: 1000

mm: 1,6...2,4 mm: (1,3...2,7) TD travel

2nd speed 1/min: 750 Charge press. hPa: 1000

TD travel mm: 3,3...3,7 mm: (2,8...4,2)
3rd speed 1/min: 1100

Charge press. hPa: 1000 TD travel mm: 4,55,3 mm: (4,25,6) Supply-pump pressure characteristic:	Del.quantity cm3/: 74,079,0 1000H.: (72,580,5) 8th speed 1/min: 750 Charge press. hPa: 1000 Del.quantity cm3/: 82,583,5
1st speed 1/min: 500 Charge press. hPa: 1000 Supply-pump pressure bar: 3,44,0 2nd speed 1/min: 750 Charge press. hPa: 1000 Supply-pump pressure bar: 4,55,1 3rd speed 1/min: 1100 Charge press. hPa: 1000 Supply-pump	1000H: (80,086,0) 9th speed 1/min: 500 Charge press. hPa: 1000 Del.quantity cm3/: 85,093,0 1000H: - 10th speed 1/min: 500 Charge press. hPa: - Del.quantity cm3/: 49,550,5 1000H: (46,054,0) Zero delivery (stop):
pressure bar: 5,96,5 Overflow quantity at overflow valve: 1st speed 1/min: 500	Mech. shutoff: Speed 1/min: 1100 Del.quantity cm3/: 03 1000H.: -
Charge press. hPa: - Oveflow: 4183 quantity cm3/10s: (2698) 2nd speed: 1/min: 1100 Charge press. hPa: 1000 Overflow: 55138 quantity cm3/10s: (40153)	Electr. shutoff: Speed 1/min: 400 ELAB volt: - Del.quantity cm3/: 0,03,0 max. 1000H.: -
Delivery-quant. and breakaway char.:	Idle delivery:
1st speed 1/min: 650 Charge-air pressure-setting point hPa: 325 LDA stroke mm: 5,0 Del.quantity cm3/: 72,073,0 1000H.: (68,576,5) 2nd speed 1/min: 1300 Charge press. hPa: 1000 Del.quantity cm3/: 0,03,0 1000H.: - 3rd speed 1/min: 1250 Charge press. hPa: 1000	1st speed 1/min: 375 Del.quantity cm3/: 33,541,5 1000H.: - 2nd speed 1/min: 400 Del.quantity cm3/: 8,514,5 1000H.: (6,516,5) 3rd speed 1/min: 550 Del.quantity cm3/: 0,04,0 1000H.: - Automatic starting fuel delivery:
Del.quantity cm3/: 0,015,0 1000H.:- 4th speed 1/min: 1200 Charge press. hPa: 1000 Del.quantity cm3/: 15,055,0 1000H.:- 5th speed 1/min: 1170 Charge press. hPa: 1000 Del.quantity cm3/: 52,058,0 1000H.: (49,061,0) 6th speed 1/min: 1100 Charge press. hPa: 1000 Del.quantity cm3/: 67,069,0 1000H.: (65,571,5) 7th speed 1/min: 900 Charge press. hPa: 1000	1st speed 1/min: 250 Charge press. hPa: - Del.quantity cm3/: - ind. 1000H: 75,0 2nd speed 1/min: 400 Charge press. hPa: - Del.quantity cm3/: - max. 1000H: 75,0 Shutoff electromagnet: Cut-in min. voltage : 10,0 Rated voltage : 12,0
	1

Mounting and assembly dimensions:

Designation K KF MS SVS max. XK XL mm : -mm : 5,0...5,4 mm : 0,8...1,2 mm : 1,3 mm : 18,1...20,8 mm : 9,9...13,3

Remarks:

Note inst. in remarks column

: CUM 3,9 N11 Test sheet Edition : 02.02.89

replaces

Calibrating oil : ISO 4113

Injection pump : VE 4/12F1050 R226-10

: 0 460 424 053 Type number

Customer-specific information

Customer

Engine

: 4 BT 390 IND

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

assembly : 1 688 901 027

Opening |

bar: 250...253 pressure

Perforated-plate

diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery

Prestroke mm : 0.3(from BDC): +-0.02

Start of delivery block Piston stroke mm: 1.8

mm: +0.02(0.06)

Outlet.

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 900

Setting value mm: 2.3...2.7

Supply-pump pressure:

1/min: 900 Speed

Setting value bar: 4.1...4.7

Full-load del. W/out charge press.:

1/min: 900 Speed

Del.quantity cm3/ 1000H.: 69.0...70.0

cm3/: 4.0 Dispersion

1000H.: (4.5)

Low-idle speed regulation:

Speed 1/min: 375

Del.quantity cm3/ 1000H.: 10.0...12.0 Dispersion cm3/: 5.5

1000H.: (7.0)

Full-load speed regulation:

Speed 1/min: 1110

Del.quantity cm3/ 1000H: 49.0...55.0

Start:

Speed 1/min: 100

Del.quantity mind cm3/1000H.: 70.0

Inspection pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 750

mm: 1.3...2.1 mm: (1.0...2.4) TD travel

1/min: 900 2nd speed

TD travel

mm: 2.3...2.7 mm: (1.8...3.2)

3rd speed 1/min: 1050

mm: 2.8...3.6 mm: (2.5...3.9) TD travel

Supply-pump pressure characteristic:

1st speed 1/min: 500

Supply-pump

bar: 2.3...2.9 pressure

1/min: 900 2nd speed

Supply-pump

bar: 4.1...4.7 pressure

3rd speed 1/min: 1050

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Supply-pump bar: 4.8...5.4 pressure Overflow quantity at overflow valve: 1st speed 1/min: 500 : 41...83 Oveflow cm3/10s: (26...98) quantity 1/min: 1050 2nd speed Overflow : 55...138 quantity cm3/10s: (40...153) Delivery-quant. and breakaway char .: 1/min: 1200 1st speed Del.quantity cm3/: 0.0...3.0 1000H.: -1/min: 1180 2nd speed Del.quantity cm3/: 0.0...15.0 1000H.: -1/min: 1140 3rd speed Del.quantity cm3/: 15.0...55.0 1000H.: -1/min: 1110 4th speed Del.quantity cm3/: 49.0...55.0 1000H.: (46.0...58.0) 1/min: 1050 5th speed Del.quantity cm3/: 66.0...69.0 1000H.: (64.5...70.5) 1/min: 900 6th speed Del.quantity cm3/: 69.0...70.0 1000H.: (66.5...72.5) 7th speed 1/min: 750 Del.quantity cm3/: 72.0...76.0 1000H.: (70.0...78.0) 8th speed 1/min: 500 Del.quantity cm3/: 72.0...80.0 1000H: (70.0...82.0) Zero delivery (stop): Mech. shutoff: Speed 1/min: 1050 Del.quantity cm3/: 0..3 1000H.: -Electr. shutoff: 1/min: 375 Speed ELAB volt: -Del.quantity cm3/: 0.0...3.0 1000H.: max. Idle delivery: 1/min: 375 1st speed Del.quantity cm3/: 10.0..12.0 1000H.: (6.0...16.0) 1/min: 500 2nd speed

001

Del.quantity cm3/: 0.0...4.0 1000H.: -Automatic starting fuel delivery: 1st speed 1/min: 130 Del.quantity cm3/: -ind. 1000H: 80.0 1/min: 240 2nd speed Del.quantity cm3/: -max. 1000H: 80.0 max. Shutoff electromagnet: Cut-in min. voltage : 10.0 Rated voltage : 12.0 Mounting and assembly dimensions: Designation K mm KF : 5.0...5.4 mm MS : 1.1...1.5 SVS max. mm XK mm : -XL mm : -Remarks:

Note inst. in remarks column

: STE 6,5K4 Test sheet : 10.03.89 Edition

replaces

: ISO 4113

Calibrating oil

Injection pump : VE 6/12F1200 R235 : 0 460 426 079 Type number

Customer Part-No. :

Customer-specific information Customer : STEYR

Engine : WD 612-04

Power k: 100

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer: 40...48 : 42...50 electronically

Inlet press., bar: 0,35

Calibrating nozzle-holder

assembly : 1 688 901 020

Opening

bar: 172...175 pressure

Perforated-plate

diameter mm : 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery Prestroke nm : -(from BDC): -

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1100 Setting value mm: 2,2...2,6 Supply-pump pressure:

1/min: 1100 Speed Setting value bar: 6,1...6,7

Full-load del. w/out charge press.:

Speed 1/min: 1000

Del.quantity cm3/ 1000H.: 95,0...96,0 Dispersion cm3/: 3,5 1000н.: -

Low-idle speed regulation:

1/min: 325 Speed

Del.quantity cm3/ 1000H.: 18,0...22,0 Dispersion cm3/: 3,5 1000H.: (4,5)

Full-load speed regulation:

Speed 1/min: 1250

Del.quantity cm3/

1000H: 61,0...67,0

Start:

Speed 1/min: 100 Del.quantity cm3/1000H.: 90,0 mind

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 900

mm: 0,8...1,4 mm: (0,4...1,8) TD travel

1/min: 1100 2nd speed

mm: 2,2...2,6 mm: (1,7...3,1) TD travel

3rd speed 1/min: 1200

mm: 2,7...3,3 mm: (2,3...3,7) TD travel

Supply-pump pressure characteristic:

1st speed 1/min: 500

Supply-pump

bar: 3,5...4,1 1/min: 1100 pressure 2nd speed

Supply-pump

bar: 6,1...6,7 1/min: 1200 pressure

3rd speed

Supply-pump pressure bar: 6,6...7,2

Overflow quantity at overflow valve:
1st speed 1/min: 500 Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1200 Overflow : 55138 quantity cm3/10s: (40153)
Delivery-quant. and breakaway char.:
1st speed 1/min: 1350 Del.quantity cm3/: 0,03,0 1000H.: - 2nd speed 1/min: 1300 Del.quantity cm3/: 26,034,0 1000H.: (25,035,0) 3rd speed 1/min: 1250 Del.quantity cm3/: 61,067,0 1000H.: (59,069,0) 4th speed 1/min: 1200 Del.quantity cm3/: 90,593,5 1000H.: (89,095,0) 5th speed 1/min: 1000 Del.quantity cm3/: 95,096,0 1000H.: (92,598,5) 6th speed 1/min: 700 Del.quantity cm3/: 88,891,2 1000H.: (86,393,7) 7th speed 1/min: 500
Del.quantity cm3/: 82,585,5 1000H.: (80,387,7)
Zero delivery (stop):
Mech. shutoff: Speed 1/min: 1200 Del.quantity cm3/: - 1000H.: -
Idle delivery:
1st speed
Del.quantity cm3/: 1,07,0 1000H.: (0,09,0)
3rd speed
Automatic starting fuel delivery:
1st speed 1/min: 170 Del.quantity cm3/: - ind. 1000H: 90,0

2nd speed 1/min: 350
Del.quantity cm3/: max. 1000H: 82,0

3rd speed 1/min: 250
Del.quantity cm3/: 1000H:
Mounting and assembly dimensions:

Designation K mm: KF mm: 5,6...6,0
SVS max. mm: 4,0

Remarks:

Note inst. in remarks column

Test sheet : PER 6,0 C : 03.02.89 Edition : 29.07.87 replaces Calibrating oil : ISO 4113

: VE 6/12F1300 R240 : 0 460 426 084 Injection pump Type number

Customer-specific information Customer : PERKINS

: T6 60 CC TRU Engine

TEST BENCH REQUIREMENTS

Calibrating oil return temp.

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

assembly : 1 688 901 020

Opening

bar: 172...175 pressure

Perforated plate

diameter mm: 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery

mm : 0.25Prestroke

(from BDC): +0.02(0.04)

Start of delivery block Piston stroke mm: 1.0 mm: +-0.02

Outlet

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1100 Speed Charge press. hPa: 1000

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Setting value mm: 1.3...1.7

Supply-pump pressure:

Speed 1/min: 1100 Charge press. hPa: 1000 Setting value bar: 6.5...7.1

Full-load del. with charge press.:

Speed 1/min: 700 Charge press. hPa: 1000

Del.quantity cm3/ 1000H.: 99.0...100.0

cm3/ : 5.0 Dispersion 1000H: -

Full-load del. w/out charge press.:

1/min: 700 Speed

Del.quantity cm3/ 1000H.: 87.0...88.0

Low-idle speed regulation:

1/min: 300 Speed Charge press. hPa: -Del.quantity cm3/ 1000H.: 16.5...20.5 Dispersion cm3/: 5.0

Dispersion 1000H.: -

Full-load speed regulation:

Speed 1/min: 1450 Charge press. hPa: 1000 Del.quantity cm3/ 1000H: 47.0...53.0

Start:

1/min: 100 Speed Charge press. hPa: -Del.quantity cm3/1000H.: 120.0 mind

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000 hPa: 1000 Charge press. TD travel

2nd speed

mm: 0.4...1.2

mm: (0.1...1.5) 1/min: 1100

Charge press. hPa: 1000 mm: 1.3...1.7 mm: (0.8...2.2) TD travel

3rd speed 1/min: 1300 Charge press. hPa: 1000 TD travel mm: 2.02.8 mm: (1.73.1)	Charge press. hPa: 1000 Del.quantity cm3/: 99.0100.0 1000H.: (96.5102.5) 8th speed 1/min: 700 Charge press. hPa: -
Supply-pump pressure characteristic:	Del.quantity cm3/: 87.088.0 1000H: (84.590.5)
1st speed 1/min: 500 Charge press. hPa: 1000 Supply-pump pressure bar: 3.94.5 2nd speed 1/min: 1100	9th speed 1/min: 500 Charge press. hPa: - Del.quantity cm3/: 80.083.0 1000H: (78.584.5)
Charge press. hPa: 1000 Supply-pump	<pre># Zero delivery (stop):</pre>
pressure bar: 6.57.1 3rd speed 1/min: 1300 Charge press. hPa: 1000 Supply-pump pressure bar: 7.37.9	Mech. shutoff: Speed 1/min: 1300 Del.quantity cm3/: 03 1000H.: -
Overflow quantity at overflow valve:	Electr. shutoff:
1st speed 1/min: 500 Charge press. hPa: - Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 1300	Speed 1/min: 300 + ELAB volt: - - Del.quantity cm3/: 0.03.0 - max. 1000H.: -
Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153)	Idle delivery:
Delivery-quant. and breakaway char.:	1st speed 1/min: 300 Del.quantity cm3/: 16.520.5 1000H.: (13.523.5)
1st speed 1/min: 700 Charge-air pressure-setting point hPa: 450 LDA stroke mm: 6.3 Del.quantity cm3/: 95.096.0 1000H.: (92.598.5)	2nd speed 1/min: 350 Del.quantity cm3/: 4.510.5 1000H.: (2.512.5) 3rd speed 1/min: 400 Del.quantity cm3/: 0.02.6 1000H.: -
2nd speed 1/min: 1550 Charge press. hPa: 1000	Automatic starting fuel delivery:
Del.quantity cm3/: 0.07.0 1000H.: - 3rd speed 1/min: 1500 Charge press. hPa: 1000	- 1st speed 1/min: 150 Charge press. hPa: - Del.quantity cm3/: - ind. 1000H: 95.0
Del.quantity cm3/: 13.521.5 1000H.: (10.524.5) 4th speed 1/min: 1450 Charge press. hPa: 1000 Del.quantity cm3/: 47.053.0	- 2nd speed 1/min: 230 Charge press. hPa: - Del.quantity cm3/: - max. 1000H: 85.0
1000H.: (44.056.0) 5th speed 1/min: 1300 Charge press. hPa: 1000	Shutoff electromagnet:
Del.quantity cm3/: 95.098.0 - 1000H.: (93.599.5) - 6th speed 1/min: 1000 - Charge press. hPa: 1000 -	Cut-in min. voltage : 20.0 Rated voltage : 24.0
Del.quantity cm3/: 99.5102.5 - 1000H.: (98.0104.0) -	Mounting and assembly dimensions:
7th speed 1/min: 700	- Designation

D05

K mm : KF mm : K-OT
MS mm : 0.6...1.0
SVS max. mm : 3.2
XK mm : 17.0...19.0
XL mm : 12.8...16.2

Remarks:

Note inst. in remarks column

: PER 6.0 C2 Test sheet

Compl. date:

Edition : 03.02.89 : 19.04.88 replaces Calibrating oil : ISO 4113

Injection pump : VE 6/12F1300 R240-2

Type number : 0 460 426 094

Customer-specific information Customer : PERKINS

Engine : T6 60 CC TRU

TEST BENCH REQUIREMENTS

Calibrating oil return temp. °C

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 020 assembly

Opening

bar: 172...175 pressure

Perforated-plate

diameter mm: 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm : 840 x Length

Start of delivery

mm: 0.25 Prestroke

(from BDC): +0.02(0.04)

Start of delivery block Piston stroke mm: 1.0 mm: +-0.02

Outlet : A

Injection pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1100 Speed

D07

Charge press. hPa: 1000 Setting value mm: 1.3...1.7

Supply-pump pressure:

Speed 1/min: 1100 Charge press. hPa: 1000 Setting value bar: 6.5...7.1

Full-load del. with charge press.:

Speed 1/min: 700 Charge press. hPa: 1000 Charge press. ... Del.quantity cm3/ 1000H.: 99.0...100.0

cm3/:5.0Dispersion 1000H: -

Full-load del. w/out charge press.:

Speed 1/min: 700

Del.quantity cm3/ 1000H.: 87.0...88.0

Low-idle speed regulation:

Speed 1/min: 300 Charge press. hPa: -Del.quantity cm3/

1000H.: 16.5...20.5 cm3/: 5.0

Dispersion 1000H.: -

Full-load speed regulation:

1/min: 1450 Speed Charge press. hPa: 1000

Del.quantity cm3/

1000H: 47.0...53.0

mm: (0.1...1.5)

Start:

Speed 1/min: 100 Charge press. hPa: -Del.quantity cm3/1000H.: 120.0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 1000 1st speed Charge press. hPa: 1000 mm: 0.4...1.2 TD travel

1/min: 1100 2nd speed Charge press. hPa: 1000

TD travel mm: 1.31.7	+ Del.quantity cm3/: 99.5102.5
mm: (0.82.2)	1000H.: (98.0104.0)
3rd speed 1/min: 1300	+ 7th speed 1/min: 700
Chamma annua hour 1000	Charge press. hPa: 1000
TD travel mm: 2.02.8	Dal guartity and 1000
10 Clavel IIII. 2.02.0	+ Del.quantity cm3/: 99.0100.0
mm: (1.73.1)	10004.: (96.5102.5)
	+ 8th speed 1/min: 700
Supply-pump pressure characteristic:	+ Charge press. hPa: -
• • • • • • • • • • • • • • • • • • • •	+ Del.quantity cm3/: 87.088.0
1st speed 1/min: 500	1000H: (84.590.5)
Charge press. hPa: 1000	+ 9th speed 1/min: 500
Supply-pump	+ Charge press. hPa: -
pressure bar: 3.94.5	T cliarge press. IIIa.
2nd speed 1/min: 1100	+ Del.quantity cm3/: 80.083.0
Ziu speed 1/mm: 1100	+ 1000H: (78.584.5)
Charge press. hPa: 1000	†
Supply-pump	+ Zero delivery (stop):
pressure bar: 6.57.1	+
3rd speed 1/min: 1300	+ Mech. shutoff:
Charge press. hPa: 1000	1 Indiana and a second a second and a second a second and
Supply-pump	+ Speed 1/min: 1300
pressure bar: 7.37.9	
pressure part (1.5(1.9	+ Del.quantity_cm3/: 03
	† 1000H.: -
Overflow quantity at overflow valve:	+
	† Idle delivery:
1st speed 1/min: 500	+
Charge press. hPa: -	+ 1st speed 1/min: 300
Oveflow : 4183	+ Del quantity cm3/: 16 5 20 5
quantity cm3/10s: (2698)	Del.quantity cm3/: 16.520.5 1000H.: (13.523.5)
2nd speed 1/min: 1300	+ 2nd speed 1/min: 350
Charge press. hPa: 1000	Dol guartity on 7/4 / 5 10 5
Overflow : 55138	+ Del.quantity cm3/: 4.510.5 + 1000H.: (2.512.5)
augustitu == 7/10 = (/0 157)	7 (UUIII.: (2.312.3)
quantity cm3/10s: (40153)	+ 3rd speed 1/min: 400
Dald come months and breathers to	Del.quantity cm3/: 0.02.6 1000H.: -
Delivery quant. and breakaway char.:	† 1000H.: -
4-6	†
1st speed 1/min: 700	+ Automatic starting fuel delivery:
Charge-air pressure-setting	-
point hPa: 450	+ 1st speed 1/min: 150
LDA stroke mm: 6.3	+ Charge press. hPa: -
Del.quantity cm3/: 95.096.0	Del.quantity cm3/: -
1000H.: (92.598.5)	ind. 1000H: 95.0
2nd speed 1/min: 1550	T III. 1000n. 75.0
	7 2nd mand 4/1/2 270
Charge press. hPa: 1000	+ 2nd speed 1/min: 230
Del.quantity cm3/: 0.07.0	+ Charge press. hPa: -
1000H.: -	+ Del.quantity cm3/: -
3rd speed 1/min: 1500	+ max. 1000H: 85.0
Charge press. hPa: 1000	+
Del.quantity cm3/: 13.521.5	Mounting and assembly dimensions:
1000H.: (10.524.5)	+
4th speed 1/min: 1450	Designation
Charge press. hPa: 1000	+ K mm : -
Del.quantity cm3/: 47.053.0	∔ KF mm : K-OT
1000H.: (44.056.0)	
5th speed 1/min: 1300	
	+ SVS max. mm : -
Charge press. hPa: 1000	+ XK mm : 17.019.0
Deliquantity cm3/: 95.098.0	† XL mm : 12.816.2
1000H.: (93.599.5)	† 5.
6th speed 1/min: 1000	+ Remarks:
Charge press. hPa: 1000	†
	+

Note inst. in remarks column

Test sheet : CUM 5,9 U14 Edition : 01.02.89

replaces

Calibrating oil : ISO 4113

Injection pump : VE 6/12F1100 R232-2

Type number : 0 460 426 111

Customer-specific information Customer : CUMMINS

Engine : 6 BT-5.9IND

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

assembly : 1688 901 027

Opening

bar: 250...253 pressure

Perforated plate

diameter mm : 0.5

Test inj. tubing : 1680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery

mm : 0.3Prestroke

(from BDC): +0.02(0.06)

Start of delivery block Piston stroke mm: 1.6

mm: +0.02(0.06)

Outlet

Injection pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1000 Charge press. hPa: 1000

Setting value mm: 1.8...2.2

Supply-pump pressure:

1/min: 1000 Speed Charge press. hPa: 1000 Setting value bar: 7.4...8.0

Full-load del. with charge press.:

Speed 1/min: 900 Charge press. hPa: 1000

Del.quantity cm3/ 1000H.: 67.5...68.5

Dispersion cm3/:4.01000H: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 600

Del.quantity cm3/ 1000H.: 56.0...57.0 Dispersion cm3/: 9.0

1000H.: -

Low-idle speed regulation:

Speed 1/min: 340 Charge press. hPa: -Del.quantity cm3/ 1000H:: 10.0...12.0 Dispersion cm3/: 5.5

1000H.: (7.0)

Full-load speed regulation:

1/min: 1170 Speed Charge press. hPa: 1000

Del.quantity cm3/ 1000H: 44.5...50.5

Start:

1/min: 100 Speed Charge press. hPa: -Del.quantity : -mind cm3/1000H.: 65.0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 900 Charge press. hPa: 1000

mm: 0.7...1.5 mm: (0.4...1.8) TD travel

1/min: 1000 2nd speed Charge press. hPa: 1000

D₀0

TD travel mm: 1.82.2	+ Del.quantity cm3/: 44.550.5
mm: (1.32.7)	+ 1000H.: (41.553.5)
3rd speed 1/min: 1100	+ 6th speed 1/min: 1100
Charge press. hPa: 1000	+ Charge press. hPa: 1000
TD travel mm: 2.43.2	+ Del.quantity cm3/: 64.567.5
mm: (2.13.5)	+ 1000H.: (63.069.0)
	+ 7th speed 1/min: 900
Supply-pump pressure characteristic:	+ Charge press hPa 1000
the state of the s	+ Del.quantity cm3/: 67.5 .68.5
1st speed 1/min: 600	Del.quantity cm3/: 67.568.5 1000H.: (65.071.0)
Charge press. hPa: 1000	+ 8th speed 1/min: 750
Supply-pump	Charge press. hPa: 1000
pressure bar: 5.76.3	+ Del.quantity cm3/: 69.073.0
2nd speed 1/min: 900	8th speed 1/min: 750 Charge press. hPa: 1000 Del.quantity cm3/: 69.073.0 1000H: (67.075.0) 9th speed 1/min: 600 Charge press. hPa: 1000 Del.quantity cm3/: 72.082.0 1000H: - 10th speed 1/min: 600 Charge press. hPa: - Del.quantity cm3/: 56.057.0 1000H: (52.570.5)
Charge press. hPa: 1000	+ 9th speed 1/min: 600
Supply-pump	Charge press has 1000
pressure bar: 7.17.7	Charge press. hPa: 1000 Del.quantity cm3/: 72.082.0
3rd speed 1/min: 1000	1000H: -
Charge press. hPa: 1000	10th speed 1/min: 600
Supply-pump	Change appear book
preceire hart 7 / 8 /	+ Charge press. hPa: -
pressure bar: 7.48.0 4th speed 1/min: 1100	+ Del.quantity cm3/: 56.057.0 + 1000H: (52.570.5)
Charge press. hPa: 1000	† 1000%: (32.3/0.3)
	Toma dal disami, Caban).
Supply-pump pressure bar: 7.98.5	† Zero delivery (stop):
pressure part (1.9o.)	T work about see
Oranglas manufilms at assault as selections	+ Mech. shutoff:
Overflow quantity at overflow valve:	44.1.4400
1-1	+ Speed 1/min: 1100
1st speed 1/min: 600	- Del.quantity cm3/: 03 - 1000H.: -
Charge press. hPa: -	+ 1000H.: -
A 1 0 0 7	i i
Oveflow : 4183	+
quantity cm3/10s: (2698)	+ Electr. shutoff:
quantity cm3/10s: (2698) 2nd speed 1/min: 1100	Electr. shutoff:
quantity cm3/10s: (2698) 2nd speed	Electr. shutoff: Speed 1/min: 340
quantity cm3/10s: (2698) 2nd speed	Electr. shutoff: Speed 1/min: 340 ELAB volt: -
quantity cm3/10s: (2698) 2nd speed	Electr. shutoff: Speed 1/min: 340 ELAB volt: - Del.quantity cm3/: 0.03.0
quantity cm3/10s: (2698) 2nd speed 1/min: 1100 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153)	Electr. shutoff: Speed 1/min: 340 ELAB volt: -
quantity cm3/10s: (2698) 2nd speed	Electr. shutoff: Speed 1/min: 340 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: -
quantity cm3/10s: (2698) 2nd speed 1/min: 1100 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.:	Electr. shutoff: Speed 1/min: 340 ELAB volt: - Del.quantity cm3/: 0.03.0
quantity cm3/10s: (2698) 2nd speed 1/min: 1100 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700	Electr. shutoff: Speed 1/min: 340 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery:
quantity cm3/10s: (2698) 2nd speed 1/min: 1100 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700 Charge-air pressure-setting	Electr. shutoff: Speed 1/min: 340 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 340
quantity cm3/10s: (2698) 2nd speed 1/min: 1100 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char:: 1st speed 1/min: 700 Charge-air pressure-setting point hPa: 400	Electr. shutoff: Speed 1/min: 340 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 340 Del.quantity cm3/: 10.012.0
quantity cm3/10s: (2698) 2nd speed 1/min: 1100 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery quant. and breakaway char.: 1st speed 1/min: 700 Charge air pressure setting point hPa: 400 LDA stroke mm: 7,0	Electr. shutoff: Speed 1/min: 340 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 340 Del.quantity cm3/: 10.012.0
quantity cm3/10s: (2698) 2nd speed 1/min: 1100 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700 Charge-air pressure-setting point hPa: 400 LDA stroke mm: 7,0 Del.quantity cm3/: 66.067.0	Electr. shutoff: Speed 1/min: 340 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 340
quantity cm3/10s: (2698) 2nd speed 1/min: 1100 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700 Charge-air pressure-setting point hPa: 400 LDA stroke mm: 7,0 Del.quantity cm3/: 66.067.0 1000H.: (62.570.5)	Electr. shutoff: Speed 1/min: 340 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 340 Del.quantity cm3/: 10.012.0 1000H.: (6.016.0) 2nd speed 1/min: 450 Del.quantity cm3/: 0.04.0
quantity cm3/10s: (2698) 2nd speed 1/min: 1100 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700 Charge-air pressure-setting point hPa: 400 LDA stroke mm: 7,0 Del.quantity cm3/: 66.067.0	Electr. shutoff: Speed 1/min: 340 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 340 Del.quantity cm3/: 10.012.0 1000H.: (6.016.0) 2nd speed 1/min: 450 Del.quantity cm3/: 0.04.0
quantity cm3/10s: (2698) 2nd speed 1/min: 1100 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700 Charge-air pressure-setting point hPa: 400 LDA stroke mm: 7,0 Del.quantity cm3/: 66.067.0 1000H.: (62.570.5) 2nd speed 1/min: 1280 Charge press. hPa: 1000	Electr. shutoff: Speed 1/min: 340 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 340 Del.quantity cm3/: 10.012.0 1000H.: (6.016.0) 2nd speed 1/min: 450
quantity cm3/10s: (2698) 2nd speed 1/min: 1100 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700 Charge-air pressure-setting point hPa: 400 LDA stroke mm: 7,0 Del.quantity cm3/: 66.067.0 1000H.: (62.570.5) 2nd speed 1/min: 1280 Charge press. hPa: 1000 Del.quantity cm3/: 0.03.0	Electr. shutoff: Speed 1/min: 340 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 340 Del.quantity cm3/: 10.012.0 1000H.: (6.016.0) 2nd speed 1/min: 450 Del.quantity cm3/: 0.04.0 1000H.: -
quantity cm3/10s: (2698) 2nd speed 1/min: 1100 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700 Charge-air pressure-setting point hPa: 400 LDA stroke mm: 7,0 Del.quantity cm3/: 66.067.0 1000H.: (62.570.5) 2nd speed 1/min: 1280 Charge press. hPa: 1000 Del.quantity cm3/: 0.03.0 1000H.: -	Electr. shutoff: Speed 1/min: 340 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 340 Del.quantity cm3/: 10.012.0 1000H.: (6.016.0) 2nd speed 1/min: 450 Del.quantity cm3/: 0.04.0
quantity cm3/10s: (2698) 2nd speed 1/min: 1100 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700 Charge-air pressure-setting point hPa: 400 LDA stroke mm: 7,0 Del.quantity cm3/: 66.067.0 1000H.: (62.570.5) 2nd speed 1/min: 1280 Charge press. hPa: 1000 Del.quantity cm3/: 0.03.0	Electr. shutoff: Speed 1/min: 340 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 340 Del.quantity cm3/: 10.012.0 1000H.: (6.016.0) 2nd speed 1/min: 450 Del.quantity cm3/: 0.04.0 1000H.: - Automatic starting fuel delivery:
quantity cm3/10s: (2698) 2nd speed 1/min: 1100 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700 Charge-air pressure-setting point hPa: 400 LDA stroke mm: 7,0 Del.quantity cm3/: 66.067.0 1000H.: (62.570.5) 2nd speed 1/min: 1280 Charge press. hPa: 1000 Del.quantity cm3/: 0.03.0 1000H.: -	Electr. shutoff: Speed 1/min: 340 ELAB volt: — Del.quantity cm3/: 0.03.0 max. 1000H.: — Idle delivery: 1st speed 1/min: 340 Del.quantity cm3/: 10.012.0 1000H.: (6.016.0) 2nd speed 1/min: 450 Del.quantity cm3/: 0.04.0 1000H.: — Automatic starting fuel delivery: 1st speed 1/min: 350
quantity cm3/10s: (2698) 2nd speed 1/min: 1100 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700 Charge-air pressure-setting point hPa: 400 LDA stroke mm: 7,0 Del.quantity cm3/: 66.067.0 1000H.: (62.570.5) 2nd speed 1/min: 1280 Charge press. hPa: 1000 Del.quantity cm3/: 0.03.0 1000H.: - 3rd speed 1/min: 1230 Charge press. hPa: 1000 Del.quantity cm3/: 0.015.0	Electr. shutoff: Speed 1/min: 340 ELAB volt: — Del.quantity cm3/: 0.03.0 max. 1000H.: — Idle delivery: 1st speed 1/min: 340 Del.quantity cm3/: 10.012.0 1000H.: (6.016.0) 2nd speed 1/min: 450 Del.quantity cm3/: 0.04.0 1000H.: — Automatic starting fuel delivery: 1st speed 1/min: 350 Charge press. hPa: —
quantity cm3/10s: (2698) 2nd speed 1/min: 1100 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700 Charge-air pressure-setting point hPa: 400 LDA stroke mm: 7,0 Del.quantity cm3/: 66.067.0 1000H.: (62.570.5) 2nd speed 1/min: 1280 Charge press. hPa: 1000 Del.quantity cm3/: 0.03.0 1000H.: - 3rd speed 1/min: 1230 Charge press. hPa: 1000 Del.quantity cm3/: 0.015.0 1000H.: -	Electr. shutoff: Speed 1/min: 340 ELAB volt: — Del.quantity cm3/: 0.03.0 max. 1000H.: — Idle delivery: 1st speed 1/min: 340 Del.quantity cm3/: 10.012.0 1000H.: (6.016.0) 2nd speed 1/min: 450 Del.quantity cm3/: 0.04.0 1000H.: — Automatic starting fuel delivery: 1st speed 1/min: 350 Charge press. hPa: — Del.quantity cm3/: —
quantity cm3/10s: (2698) 2nd speed 1/min: 1100 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700 Charge-air pressure-setting point hPa: 400 LDA stroke mm: 7,0 Del.quantity cm3/: 66.067.0 1000H.: (62.570.5) 2nd speed 1/min: 1280 Charge press. hPa: 1000 Del.quantity cm3/: 0.03.0 1000H.: - 3rd speed 1/min: 1230 Charge press. hPa: 1000 Del.quantity cm3/: 0.015.0 1000H.: -	Electr. shutoff: Speed 1/min: 340 ELAB volt: — Del.quantity cm3/: 0.03.0 max. 1000H.: — Idle delivery: 1st speed 1/min: 340 Del.quantity cm3/: 10.012.0 1000H.: (6.016.0) 2nd speed 1/min: 450 Del.quantity cm3/: 0.04.0 1000H.: — Automatic starting fuel delivery: 1st speed 1/min: 350 Charge press. hPa: —
quantity cm3/10s: (2698) 2nd speed 1/min: 1100 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700 Charge-air pressure-setting point hPa: 400 LDA stroke mm: 7,0 Del.quantity cm3/: 66.067.0	Electr. shutoff: Speed 1/min: 340 ELAB volt: — Del.quantity cm3/: 0.03.0 max. 1000H.: — Idle delivery: 1st speed 1/min: 340 Del.quantity cm3/: 10.012.0 1000H.: (6.016.0) 2nd speed 1/min: 450 Del.quantity cm3/: 0.04.0 1000H.: — Automatic starting fuel delivery: 1st speed 1/min: 350 Charge press. hPa: — Del.quantity cm3/: — ind. 1000H: 70.0
quantity cm3/10s: (2698) 2nd speed 1/min: 1100 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700 Charge-air pressure-setting point hPa: 400 LDA stroke mm: 7,0 Del.quantity cm3/: 66.067.0	Electr. shutoff: Speed 1/min: 340 ELAB volt: — Del.quantity cm3/: 0.03.0 max. 1000H.: — Idle delivery: 1st speed 1/min: 340 Del.quantity cm3/: 10.012.0 1000H.: (6.016.0) 2nd speed 1/min: 450 Del.quantity cm3/: 0.04.0 1000H.: — Automatic starting fuel delivery: 1st speed 1/min: 350 Charge press. hPa: — Del.quantity cm3/: — ind. 1000H: 70.0 2nd speed 1/min: 480
quantity cm3/10s: (2698) 2nd speed 1/min: 1100 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700 Charge-air pressure-setting point hPa: 400 LDA stroke mm: 7,0 Del.quantity cm3/: 66.067.0	Electr. shutoff: Speed 1/min: 340 ELAB volt: — Del.quantity cm3/: 0.03.0 max. 1000H.: — Idle delivery: 1st speed 1/min: 340 Del.quantity cm3/: 10.012.0 1000H.: (6.016.0) 2nd speed 1/min: 450 Del.quantity cm3/: 0.04.0 1000H.: — Automatic starting fuel delivery: 1st speed 1/min: 350 Charge press. hPa: — Del.quantity cm3/: — ind. 1000H: 70.0 2nd speed 1/min: 480 Charge press. hPa: —
quantity cm3/10s: (2698) 2nd speed 1/min: 1100 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700 Charge-air pressure-setting point hPa: 400 LDA stroke mm: 7,0 Del.quantity cm3/: 66.067.0	Electr. shutoff: Speed 1/min: 340 ELAB volt: — Del.quantity cm3/: 0.03.0 max. 1000H.: — Idle delivery: 1st speed 1/min: 340 Del.quantity cm3/: 10.012.0 1000H.: (6.016.0) 2nd speed 1/min: 450 Del.quantity cm3/: 0.04.0 1000H.: — Automatic starting fuel delivery: 1st speed 1/min: 350 Charge press. hPa: — Del.quantity cm3/: — ind. 1000H: 70.0 2nd speed 1/min: 480 Charge press. hPa: — Del.quantity cm3/: —
quantity cm3/10s: (2698) 2nd speed 1/min: 1100 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery quant. and breakaway char.: 1st speed 1/min: 700 Charge air pressure setting point hPa: 400 LDA stroke mm: 7,0 Del.quantity cm3/: 66.067.0 1000H.: (62.570.5) 2nd speed 1/min: 1280 Charge press. hPa: 1000 Del.quantity cm3/: 0.03.0 1000H.: - 3rd speed 1/min: 1230 Charge press. hPa: 1000 Del.quantity cm3/: 0.015.0 1000H.: - 4th speed 1/min: 1200 Charge press. hPa: 1000 Del.quantity cm3/: 15.055.0 1000H.: - 5th speed 1/min: 1170	Electr. shutoff: Speed 1/min: 340 ELAB volt: — Del.quantity cm3/: 0.03.0 max. 1000H.: — Idle delivery: 1st speed 1/min: 340 Del.quantity cm3/: 10.012.0 1000H.: (6.016.0) 2nd speed 1/min: 450 Del.quantity cm3/: 0.04.0 1000H.: — Automatic starting fuel delivery: 1st speed 1/min: 350 Charge press. hPa: — Del.quantity cm3/: — ind. 1000H: 70.0 2nd speed 1/min: 480 Charge press. hPa: —
quantity cm3/10s: (2698) 2nd speed 1/min: 1100 Charge press. hPa: 1000 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700 Charge-air pressure-setting point hPa: 400 LDA stroke mm: 7,0 Del.quantity cm3/: 66.067.0	Electr. shutoff: Speed 1/min: 340 ELAB volt: — Del.quantity cm3/: 0.03.0 max. 1000H.: — Idle delivery: 1st speed 1/min: 340 Del.quantity cm3/: 10.012.0 1000H.: (6.016.0) 2nd speed 1/min: 450 Del.quantity cm3/: 0.04.0 1000H.: — Automatic starting fuel delivery: 1st speed 1/min: 350 Charge press. hPa: — Del.quantity cm3/: — ind. 1000H: 70.0 2nd speed 1/min: 480 Charge press. hPa: — Del.quantity cm3/: —

Cut-in min. voltage Rated voltage : 10.0 : 12.0

Mounting and assembly dimensions:

Designation K KF MS SVS max. XK XL mm mm : -mm : 5.0...5.4 mm : 1.3...1.7 mm : 1.0 mm : 21,8...23,8 mm : 11,7...15,1

Remarks:

Note inst. in remarks column

Test sheet : CUM 5.9 U15 : 31.01.89 Edition

replaces

Calibrating oil : ISO 4113

Injection pump : VE 6/12F1250 R320 : 0 460 426 114 Type number

Customer-specific information

Customer : CDC

Engine : 6 BT-590A

TEST BENCH REQUIREMENTS

Calibrating oil return temp. °C

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

assembly : 1 688 901 027

Openina

bar: 250...253 pressure

Perforated plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery Prestroke mm : -(from BDC): -

Start of delivery block Piston stroke mm: 1.4

mm: +-0.02(0.06)

Outlet

Injection pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1100 Charge press. hPa: 1200

Setting value mm: 1.3...1.7

KSB solenoid-operated valve volt: 12.0

Supply-pump pressure:

1/min: 1100 Speed Charge press. hPa: 1200 Setting value bar: 6.8...7.4 KSB solenoid-operated

valve volt: 12.0

Full-load del. with charge press.:

Speed 1/min: 1100 Charge press. hPa: 1200 Del.quantity cm3/ 1000H.: 75.5...76.5

KSB solenoid-operated volt: 12.0 valve Dispersion cm3/: 4.0 1000H: (4.5)

Full-load del. w/out charge press.:

1/min: 500 Speed

Del.quantity cm3/ 1000H.: 51.0...52.0

KSB solenoid-operated volt: 12.0 cm3/: 9.0 valve Dispersion 1000H .: -

Low-idle speed regulation:

Speed 1/min: 350 Charge press. hPa: Del.quantity cm3/
1000H.: 5.5...9.5

KSB solenoid-operated volt: 12.0 cm3/: 5.5 valve Dispersion 1000H.: (7.0)

Full-load speed regulation:

Speed 1/min: 1340 Charge press. hPa: 1200 Del.quantity cm3/ 1000H: 52.5...58.5

KSB solenoid-operated valve volt: 12.0

Start:

1/min: 100 Charge press. hPa: -Del.quantity mind cm3/1000H.: 60.0

KSB solenoid-operated	+ KSB solenoid-operated
valve volt: 12.0	Malua mala 12.0
valve volt. 12.0	+ valve volt: 12.0
	+ Oveflow : 41.,.83
Inspection pump test specifications	+ quantity cm3/10s: (2698)
Took anguisting the manual and	T Guarter (1) (110) (105. (2070)
Test specifications in parentheses	+ 2nd speed 1/min: 1250
	+ Charge press. hPa: 1200
Timing-device characteristic:	VCD calculated annuated
Thing device character istic.	+ KSB solenoid-operated
	+ valve volt: 12.0
	+ Overflow : 55138
1et mand 1/min. 150	7 OVER 1 LOW
1st speed 1/min: 450	quantity cm3/10s: (40153)
Charge press. hPa: -	
TD travel mm: 3.04.0	Not despes a margin and broad and a large
iv travet mm. 3.04.0	† Delivery-quant. and breakaway char.
mm: -	-
KSB solenoid-operated	1st speed 1/min: 700
NOO SOCCIDIA OPCIACCA	
valve volt: -	+ Charge-air pressure-setting
2nd speed 1/min: 1000	+ point hPa: 700
Change and land 17 1000	
Charge press. hPa: 1200	+ LDA stroke mm: -
TD travel mm: 0.51.3	+ KSB solenoid-operated
mm: (0.21.6)	+ valve volt: 12.0
KSB solenoid-operated	+ Del.quantity cm3/: 68.069.0
valve volt: 12.0	10000 . (41 5 72 5)
74CVE VOCE. 12.0	1000H.: (64.572.5)
3rd speed 1/min: 1100	+ 2nd speed 1/min: 1550
Charge press. hPa: 1200	Charge press. hPa: 1200
Th + 47 47	
TD travel mm: 1.31.7	+ KSB solenoid-operated
mm: (0.82.2)	+ valve volt: 12.0
KSB solenoid-operated	+ Del.quantity_cm3/: 0.03.0
valve volt: 12.0	1000H.: -
valve volt: 12.0 4th speed 1/min: 1250	
Change to the 1000	
Charge press. hPa: 1200	† Charge press. hPa: 1200
TD travel mm: 2.23.0	+ KSB solenoid-operated
mm: (1.93.3)	+ valve volt: 12
KSB solenoid-operated	+ Del.quantity cm3/: 0.015.0
valve volt: 12.0	+ 1000H.: -
valve vott. 12.0	T 10001
	+ 4th speed 1/min: 1410
Supply pump pressure characteristic:	+ Charge press. hPa: 1200
coupe, bank bi coodi e cilai accei iocie.	T charge press. That ILOU
	+ KSB solenoid-operated
1st speed 1/min: 500	+ valve volt: 12.0
Charge press. hPa: 1200	001 minutión (m7/, 15 0 55 0
	Del.quantity cm3/: 15.055.0
Supply-pump	→ 1000H.: -
pressure bar: 4.14.7	+ 5th speed 1/min: 1340
MCD malamatal	7 July 2000
KSB solenoid-operated	+ Charge press. hPa: 1200
valve volt: 12.0	+ KSB solenoid-operated
2nd speed 1/min: 1100	Volve volte 12 0
LIM Speed 1/11/11. 1100	valve volt: 12.0 Del.quantity cm3/: 52.558.5
Charge press. hPa: 1200	+ Del.quantity cm3/: 52.558.5
Supply-pump	+ 1000H.: (49.561.5)
	100011 (47.301.3)
pressure bar: 6.87.4	+ 6th speed 1/min: 1250
KSB solenoid-operated	+ Charge press. hPa: 1200
	+ KSB solenoid-operated
3rd speed 1/min: 1250	+ valve volt: 12.0
Charge press. hPa: 1200	+ valve volt: 12.0 - Del.quantity cm3/: 71.574.5
	Tock, quarterly clips, 11,514,5
Supply-pump	1000H.: (70.076.0)
pressure bar: 7.58.1	+ 7th speed 1/min: 1100
KSB solenoid-operated	+ Charge press. hPa: 1200
valve volt: 12.0	+ KSB solenoid-operated
A same as a manual through the same	+ valve volt: 12.0
Overflow quantity at overflow valve:	+ Deliquantity cm3/: 75.576.5
•	Del.quantity cm3/: 75.576.5 1000H.: (73.079.0)
1ct speed 1/min. 500	04h annul 4/min 700
1st speed 1/min: 500	+ 8th speed 1/min: 750
Charge press. hPa: -	+ Charge press. hPa: 1200
₩ ••••	1 11 11 11 11 11 11 11 11 11 11 11 11 1
	T

KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: 75.0...80.0 10004: (73.0...82.0) 9th speed 1/min: 500 hPa: 1200 Charge press. KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: 82.0...94.0 1000H: -1/min: 500 10th speed Charge press. hPa: -KSB solenoid-operated volt: 12.0 valve Del.quantity cm3/: 51.5...52.5 1000H: (48.0...56.0) Zero delivery (stop): Mech. shutoff: 1/min: 1250 Speed Del.quantity cm3/: 0..3 1000H.: -Electr. shutoff: Speed 1/min: 350 ELAB volt: -Del.quantity cm3/: 0.0...3.0 max. 1000H.: max. Idle delivery: 1st speed 1/min: 300 KSB solenoid-operated volt: 12.0 Del.quantity cm3/: 8.5...16.5 1000H.: -1/min: 350 2nd speed KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: 5.5...9.5 ______1000H.: (2.5...12.5) 1/min: 450 3rd speed KSB solenoid-operated volt: 12.0 valve Del.quantity cm3/: 0.0...4.0 1000H.: -Automatic starting fuel delivery: 1st speed 1/min: 130 Charge press. hPa: -KSB solenoid operated valve volt: 12.0 Deliquantity cm3/: -1000H: 60.0 ind.

Charge press. hPa: -KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: max. 1000H: 50.0

Shutoff electromagnet:

Cut-in

min. voltage : 10,0 Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

: 3.6...3.8 mm KF : K-OT mm : 1.0...1.4 MS mm SVS max. : 1,4 mm FH mm XK mm : -XL mm : -

Remarks:

D14

2nd speed

1/min: 250

Note inst. in remarks column

Test sheet : HEP 5,6 A : 01.02.89 Edition

replaces

Calibrating oil : ISO 4113

Injection pump : VE 6/12F1400 R332

: 0 460 426 121 Type number

Customer-specific information Customer : HERCULES

Engine : DT 5.6 L

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer : 40...48 : 42...50 electronically

Inlet press., bar: 0.35

Calibrating nozzle-holder

assembly : 1 688 901 027

Opening

pressure bar: 250...253

Perforated plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter x Wall thickness : 2 mm: 840 x Length

Start of delivery

Prestroke mm: 0.3

(from BDC): +-0.02(0.04)

Start of delivery block Piston stroke mm: 1.1 mm: +-0.02

Outlet

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 900 Charge press. hPa: 1000 Setting value mm: 5.0...5.4

Supply-pump pressure:

1/min: 900 Speed Charge press. hPa: 1000 Setting value bar: 3.9...4.5

Full-load del. with charge press.:

Speed 1/min: 900 Charge press. hPa: 1000 Del.quantity cm3/ 1000H.: 64.5...65.5

cm3/: 4.0 1000H: (4.5) Dispersion

Full-load del. w/out charge press.:

Speed $1/\min : 500$ Del.quantity cm3/

1000H.: 19.0...20.0

cm3/: 9.0 Dispersion 1000H.: -

Low-idle speed regulation:

1/min: 375 Speed Del.quantity cm3/ 1000H.: 6.0...8.0

cm3/: 5.5Dispersion 1000H.: (7.0)

Full-load speed regulation:

Speed 1/min: 1500 Charge press. hPa: 1000

Del.quantity cm3/ 1000H: 45.0...51.0

Start:

Speed 1/min: 100 Del.quantity cm3/1000H.: 30.0 mind

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 700 Charge press. hPa: 1000

mm: 2.9...3.7 mm: (2.6...4.0) 1/min: 900 TD travel

2nd speed Charge press. hPa: 1000

TD travel mm: 5.0...5.4 mm: (4.5...5.9)

D15

3rd speed 1/min: 1400 Charge press. hPa: 1000	+ Charge press. hPa: 1100 + Del.quantity cm3/: 64.067.0
TD travel mm: 6.27.0	1000H.: (62.069.0)
mm: (5.76.7)	+ 8th speed 1/min: 900
	+ Charge press, hPar 1000
Supply-pump pressure characteristic:	Del.quantity cm3/: 64.565.5 1000H: (62.068.0) 9th speed 1/min: 500
1st speed 1/min: 500	+ 9th speed 1/min: 500
Charge press. hPa: 1000	+ Charge press. hPa: 1000
Supply-pump	+ Del.quantity cm3/: 67.077.0
pressure bar: 2.12.7 2nd speed 1/min: 900	+ 1000H: -
2nd speed 1/min: 900	+ 10th speed 1/min: 500
Charge press. hPa: 1000	+ Charge press. hPa: -
Supply-pump	+ Del.quantity cm3/: 19.020.0
pressure bar: 3.94.5	+ 1000H: (15.523.5)
3rd speed 1/min: 1400	+
Charge press. hPa: 1000	† Zero delivery (stop):
Supply-pump	+
pressure bar: 5.96.5	Mech. shutoff:
Overflow quantity at overflow valve:	+ Speed 1/min: 1400
, , , , , , , , , , , , , , , , , , , ,	Del.quantity cm3/: 03
1st speed 1/min: 500	+ 1000H.: -
Charge press. hPa: 1000	+
Oveflow : 4183	+ Electr. shutoff:
quantity cm3/10s: (2698) 2nd speed	+
2nd speed 1/min: 1400	+ Speed 1/min: 375
Charge press. hPa: 1000	+ ELAB volt: -
Overflow : 55138	+ Del.quantity cm3/: 0.03.0
quantity cm3/10s: (40153)	+ max. 1000H.: -
44444	10001
Delivery-quant. and breakaway char.:	Idle delivery:
, , , , , , , , , , , , , , , , , , ,	+
1st speed 1/min: 700	1st speed 1/min: 375
Charge-air pressure-setting	Del.quantity cm3/: 6.07.0
point hPa: 550	+ 1000H.: (2.012.0)
LDA stroke mm: -	+ 2nd speed 1/min: 450
Del.quantity cm3/: 52.553.5	Del.quantity cm3/: 0.04.0
1000H.: (49.057.0)	1000H.: -
2nd speed 1/min: 1680	1000
Charge press. hPa: 1000	+ Automatic starting fuel delivery:
Del.quantity cm3/: 0.03.0	The condition of the control of the control of the condition of the condit
1000H.: -	+ 1st speed 1/min: 270
3rd speed 1/min: 1630	+ Del.quantity cm3/: -
Charge press. hPa: 1000	+ ind. 1000H: 45.0
Del.quantity cm3/: 0.015.0	100011. 13.0
1000H.: -	+ 2nd speed 1/min: 400
4th speed 1/min: 1590	- Del.quantity cm3/: -
Charge press. hPa: 1000	max. 1000H : 45.0
Del.quantity cm3/: 15.055.0	1
1000H.: -	+ Shutoff electromagnet:
5th speed 1/min: 1500	J. Stratoff Ceceti Shagilee.
Charge press. hPa: 1000	1 Cut-in
Deliquantity cm3/: 45.051.0	T min. voltage : 10.0
1000H.: (42.054.0)	Rated voltage : 12.0
6th speed 1/min: 1400	I nated voltage . IC.U
Charge press. hPa: 1000	1 Mounting and accomply dimensions:
Del.quantity cm3/: 60.563.5	† Mounting and assembly dimensions:
1000H.: (59.065.0)	I Designation
7th speed 1/min: 1100	+ Designation + K mm ·-
, with and works	, 12 31MIT

: 5.0...5.4 : 1.1...1.5 : -: -KF MS SVS max. XK XL UAU UEU

m mm mm

Remarks:

Note inst. in remarks column

Test sheet : CUM 5,9 U16 Edition : 02.02.89

replaces

Calibrating oil : ISO 4113

Injection pump : VE 6/12F1050 R173-11

Type number : 0 460 426 125

Customer-specific information

Customer : CDC

Engine : 6BTA- 5.9 I

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening .

bar: 250...253 pressure

Perforated-plate

diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery

Prestroke mm: 0.3

(from BDC): +-0.02(0.04)

Start of delivery block Piston stroke mm: 1.85

mm: +-0.02(0.06)

Outlet

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 750 Charge press. hPa: 1000

D18

Setting value mm: 1.5...1.9

Supply-pump pressure:

1/min: 750 Speed Charge press. hPa: 1000 Setting value bar: 2.9...3.5

Full-load del. with charge press.:

Speed 1/min: 750 Charge press. hPa: 1000

Del.quantity cm3/ 1000H.: 94.5...95.5

Dispersion cm3/: 4.01000H: (4.5)

Full-load del. w/out charge press.:

1/min: 500 Speed

Del.quantity cm3/ 1000H.: 50.5...51.5

Dispersion cm3/: 9.0

1000H.: -

Low-idle speed regulation:

Speed 1/min: 375

Del.quantity cm3/ 1000H.: 8.0...12.0

cm3/: 5.5 Dispersion

1000H.: (7.0)

Full-load speed regulation:

Speed 1/min: 1100 Charge press. hPa: 1000

Del.quantity cm3/

1000H: 73.0...79.0

Start:

1/min: 100 Speed Del.quantity mind ' cm3/1000H.: 60.0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 600 Charge press. hPa: 1000

TD travel mm: 0.5...1.3

mm: (0.2...1.6)

1/min: 750 2nd speed Charge press. hPa: 1000

TD travel mm: 1.5...1.9

mm: (1.0...2.4)

3rd speed 1/min: 1050 Charge press. hPa: 1000 TD travel mm: 2.53.3	Del.quantity cm3/: 87.590.5 1000H.: (86.092.0
mm: (2.23.6)	+ 8th speed 1/min: 750 Charge press. hPa: 1000 Del.quantity cm3/: 94.595.5
Supply-pump pressure characteristic:	1000H: (92.098.0 + 9th speed 1/min: 500
1st speed 1/min: 500	+ Charge press, hPa: 1000
Charge press. hPa: 1000	<pre>Del.quantity cm3/: 98.0106.0</pre>
Supply-pump	+ 1000H: -
pressure bar: 1.82.4	10th speed 1/min: 500
2nd speed 1/min: 750	Charge press. hPa: -
Charge press. hPa: 1000	Del.quantity cm3/: 50.551.5
Supply-pump	1000H: (46.555.5
pressure bar: 2.93.5 3rd speed 1/min: 1050	Zero delivery (stop):
Charge press. hPa: 1000	T zero decivery (stop):
Supply-pump	Mech. shutoff:
pressure bar: 4.34.9	Theory.
	Speed 1/min: 1050
Overflow quantity at overflow valve:	Del.quantity cm3/: 03 1000H.: -
1st speed	+ _, , , , , , , , , , , , , , , , , , ,
OVETLOW : 4183	Electr. shutoff:
quantity cm3/10s: (2698)	Connect Atmin 777
2nd speed 1/min: 1050	Speed 1/min: 375
Charge press. hPa: 1000 Overflow : 55138	+ ELAB volt: -
quantity cm3/10s: (40153)	+ Del.quantity cm3/: 0.03.0 + max. 1000H.: -
quarter cho/ 105. (40155)	
Delivery-quant. and breakaway char.:	Idle delivery:
1st speed 1/min: 700	1st speed
Charge-air pressure-setting	Del.quantity cm3/: 8.012.0 1000H.: (5.015.0)
point hPa: 300 LDA stroke mm: -	1000H.: (5.015.0)
LDA stroke mm: —	+ 2nd speed 1/min: 500
Del.quantity_cm3/: 79.580.5	Del.quantity cm3/: 0.04.0 1000H.: -
1000H.: (76.584.5)	† 1000H.; -
2nd speed	
Charge press. hPa: 1000	Automatic starting fuel delivery:
Del.quantity cm3/: 0.03.0 1000H.: -	104 00000 4/min 250
3rd speed 1/min: 1170	- 1st speed 1/min: 250
Charge press. hPa: 1000	Del.quantity cm3/: - ind. 1000H: 45.0
Deliquentity cm3/: 0.015.0	r iiu. 1000n. 45.0
1000H.: -	2nd speed 1/min: 450
4th speed 1/min: 1140	Del.quantity cm3/: -
Charge press. hPa: 1000	max. 1000H : 55.0
Del.quantity cm3/: 15.055.0	- 100011 1 33.0
1000H.: -	Shutoff electromagnet:
5th speed 1/min: 1100 -	-
Charge press. hPa: 1000	- Cut-in
Del.quantity cm3/: 73.079.0 -	- min. voltage : 20.0
1000H.: (70.082.0)	- Rated voltage : 24.0
6th speed 1/min: 1050 -	-
Charge press. hPa: 1000 -	Mounting and assembly dimensions:
Deliquantity cm3/: 83.586.5 -	•
1000H.: (82.088.0)	- Designation
th speed 1/min: 900 -	- K mm : -
Charge press. hPa: 1000 -	- KF mm : 5.05.4

mm : 1.2...1.6 mm : 1.2 mm : 21,8...23,8 mm : 14,1...17,5 MS SVS max. XK XL

Remarks:

Note inst. in remarks column

: CUM 5,9 U18 Test sheet Edition : 02.02.89

replaces

Calibrating oil : ISO 4113

Injection pump : VE 6/12F1050 R225-19

: 0 460 426 127 Type number

Customer-specific information : CUMMINS/GB

Engine : 6BT-5.9 IND

TEST BENCH REQUIREMENTS

Calibrating oil return temp. °C

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

assembly : 1 688 901 0207

Opening

bar: 250...253 pressure

Perforated-plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm: 840

Start of delivery

Prestroke mn : 0.3

(from BDC): +-0.02(0.04)

Start of delivery block Piston stroke mm: 1.5

mm: +-0.02(0.06)

Outlet

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 750

Setting value mm: 3.4...3.8

Supply-pump pressure:

Speed 1/min: 750 Setting value bar: 3.7...4.3

Full-load del. w/out charge press.:

1/min: 750 Speed

Del.quantity cm3/

1000H.: 73.0...74.0

Dispersion cm3/: 4.0

1000H.: (4.5)

Low-idle speed regulation:

1/min: 375 Speed

Speed Del.quantity cm3/ 1000H.: 8.0...14.0 Dispersion cm3/: 5.5 (7.0)

1000H.: (7.0)

Full-load speed regulation:

Speed 1/min: 1100

Del.quantity cm3/ 1000H: 52.0...58.0

Start:

Speed 1/min: 100

Del.quantity

cm3/1000H.: 60.0 mind

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500

TD travel mm: 1.2...2.0

mm: (0.9...2.3)

2nd speed 1/min: 750

TD travel mm: 3.4...3.8

mm: (2.9...4.3) 1/min: 1050 3rd speed

mm: 4.9...5.7 TD travel

mm: (4.6...6.0)

Supply-pump pressure characteristic:

1/min: 500 1st speed

Supply-pump

bar: 2.6...3.2 pressure

2nd speed 1/min: 750

Supply-pump

bar: 3.7...4.3 1/min: 1050 pressure

3rd speed

021

Supply-pump bar: 4.9...5.5 pressure Overflow quantity at overflow valve: 1st speed 1/min: 500 Oveflow : 41...83 cm3/10s: (26...98) quantity 2nd speed 1/min: 1050 Overflow : 55...138 quantity cm3/10s: (40...153) Delivery quant. and breakaway char .: 1st speed 1/min: 1200 Del.quantity cm3/: 0.0...3.0 1000H.: -2nd speed 1/min: 1170 Del.quaratity cm3/: 0.0...15.0 1000H.: -3rd speed 1/min: 1130
Del.quantity cm3/: 15.0...55.0
1000H.: -4th speed 1/min: 1100
Del.quantity cm3/: 52.0...58.0
1000H.: (49.0...61.0)
5th speed 1/min: 1050
Del.quantity cm3/: 68.5...71.5
1000H.: (67.0...73.0) 1/min: 900 6th speed Del.quantity cm3/: 71.0...74.0 1000H.: (69.0...76.0) 1/min: 750 7th speed Del.quantity cm3/: 73.0...74.0 1000H.: (70.5...76.5) 8th speed 1/min: 500 Del.quantity cm3/: 59.0...67.0 1000H: (57.0...69.0) Zero delivery (stop): Mech. shutoff: Speed 1/min: 1050 Del.quantity cm3/: 0..3 1000H.: -Electr. shutoff: Speed 1/min: 375 ELAB volt: -Del.quantity cm3/: 0.0...3.0 1000н.: max. Idle delivery:

Del.quantity cm3/: 0.0...4.0 1000H.: -Automatic starting fuel delivery: 1/min: 130 1st speed Del.quantity cm3/: -1000H: 60.0 ind. 1/min: 240 2nd speed Del.quantity cm3/: -max. 1000H : 60.0 Shutoff electromagnet: Cut-in min. voltage : 20.0 Rated voltage : 24.0 Mounting and assembly dimensions: Designation mm : -KF mm : 5.0...5.4 mm : 0.8...1.2 MS SVS max. mm : 2.2Remarks:

2nd speed

1st speed 1/min: 375
Del.quantity cm3/: 8.0...14.0
1000H.: (6.0...16.0)

1/min: 450

Note inst. in remarks column

Test sheet : CUM 5,9 U19 Edition : 02.02.89

replaces

Calibrating oil : ISO 4113

Injection pump : VE 6/12F1050 R225-20

Type number : 0 460 426 128

Customer-specific information

Customer : CDC

Engine : 6BT- 5.9 IND

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 035

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening |

pressure bar: 250...253

Perforated plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery

Prestroke mm : 0.3

(from BDC): +-0.02(0,04)

Start of delivery block

Piston stroke mm: 1.5

mm: +-0.02(0.06)

Outlet

Injection pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 750

Setting value mm: 3.4...3.8

Supply pump pressure:

Speed 1/min: 750 Setting value bar: 3.5...4.1

Full-load del. w/out charge press.:

1/min : 750 Speed

Del.quantity cm3/

1000H.: 64.5...65.5

Dispersion cm3/: 4.0

1000H.: (4.5)

Low-idle speed regulation:

Speed 1/min: 375

Del.quantity cm3/ 1000H.: 10.0...12.0 Dispersion cm3/: 5.5

1000H.: (7.0)

Full-load speed regulation:

Speed 1/min: 1100

Del.quantity cm3/ 1000H: 46.0...52.0

Start:

Speed 1/min: 100 Del.quantity

mind ' cm3/1000H.: 70.0

Inspection-pump test specifications Test specifications in parentheses

Timing device characteristic:

1st speed 1/min: 500

mm: 1.5...2.4 TD travel

mm: (1.2...2.6)

1/min: 750 2nd speed

mm: 3.4...3.8 mm: (2.9...4.3) 1/min: 1050 TD travel

3rd speed TD travel

mm: 5.0...5.8

mm: (4.7...6.1)

Supply-pump pressure characteristic:

Mfg. date: until : 500

Supply-pump

bar: 2.4...3.0 pressure

2nd speed 1/min: 750

Supply pump

bar: 3.5...4.1 1/min: 1050 pressure

3rd speed

Supply-pump bar: 4.6...5.2 pressure Overflow quantity at overflow valve: 1st speed 1/min: 500 Oveflow : 41...83 cm3/10s: (26...98) *quantity* 2nd speed 1/min: 1050 Overflow : 55...138 quantity cm3/10s: (40...153) Overflow Delivery quant. and breakaway char .: 1st speed 1/min: 1250 Del.quantity cm3/: 0.0...3.0 1000H.: -1/min: 1160 2nd speed Del.quantity cm3/: 0.0...15.0 1000H.: -3rd speed 1/min: 1130 Del.quantity cm3/: 15.0...55.0 1000H.: -4th speed 1/min: 1100 Del.quantity cm3/: 46.0...52.0 1000H.: (43.0...55.0) 1/min: 1050 5th speed Del.quantity cm3/: 60.5...63.5 1000H.: (59.0...65.0) 1/min: 900 6th speed Del.quantity cm3/: 62.0...65.0 1000H.: (60.0...67.0) 7th speed 1/min: 750 Del.quantity cm3/: 64.5...65.5 1000H.: (62.0...68.0) 8th speed 1/min: 500 Del.quantity cm3/: 64.0...72.0 1000H: -Zero delivery (stop): Mech. shutoff: 1/min: 1050 Speed Del.quantity cm3/: 0..3 1000H.: -Electr. shutoff: Speed 1/min: 375 ELAB volt: -Del.quantity cm3/: 0.0...3.0 max. 1000H.: -Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 10.0..12.0

Del.quantity cm3/: 0.0...4.0 1000H.: -Automatic starting fuel delivery: 1st speed 1/min: 130 Del.quantity cm3/: -1000H: 70.0 ind. 2nd speed 1/min: 350 Del.quantity cm3/: - max. 1000H: 70.0 Shutoff electromagnet: Cut-in : 20.0 min. voltage Rated voltage : 24.0 Mounting and assembly dimensions: Designation K m KF : 5.0...5.4 MS : 1.2...1.6 mm SVS max. mm XK mm XL mm : -Remarks:

1000H.: (6.0...16.0)

1/min: 500 2nd speed

Note inst. in remarks column

: CUM 5,9 U20 Test sheet Edition : 0.2.02.89

replaces

Calibrating oil : ISO 4113

Injection pump : VE 6/12F1050 R225-18

: 0 460 426 129 Type number

Customer—specific information

Customer : CDC

Engine : 6BT-5.9 IND

TEST BENCH REQUIREMENTS

Calibrating oil return temp. °C

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening

bar: 250...253 pressure

Perforated plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery

Prestroke mm : 0.3

(from BDC): +-0.02 (0.04)

Start of delivery block Piston stroke mm: 1.5

mm: +-0.02(0.06)

Outlet

Injection pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 750

Setting value mm: 3.4...3.8

D25

Supply-pump pressure:

1/min: 750 Speed

Setting value bar: 3.7...4.3

Full-load del. w/out charge press.:

1/min : 750 Speed

Del.quantity cm3/ 1000H.: 75.0...76.0 Dispersion cm3/: 4.0

1000H.: (4.5)

Low-idle speed regulation:

Speed 1/min: 375

Speed 17mm...

Del.quantity cm3/
1000H.: 10.0...12.0

Dispersion cm3/: 5.5

1000H.: (7.0)

Full-load speed regulation:

Speed 1/min: 1100

Del.quantity cm3/

1000H: 52.0...58.0

Start:

1/min: 100 Speed

Del.quantity

cm3/1000H.: 60.0

Inspection-pump test specifications Test specifications in parentheses

Timing device characteristic:

1st speed

1/min: 500 mm: 1.4...2.2 mm: (1.1...2.5) 1/min: 750 TD travel

2nd speed

mm: 3.4...3.8 TD travel

mm: (2.9...4.3) 1/min: 1050

3rd speed

TD travel

mm: 4.6...5.4 mm: (4.3...5.7)

Supply-pump pressure characteristic:

1st speed 1/min: 500

Supply-pump

bar: 2.6...3.2 1/min: 750 pressure

2nd speed

Supply-pump

bar: 3.7...4.3 pressure

3rd speed 1/min: 1050

Supply-pump bar: 4.9...5.5 pressure Overflow quantity at overflow valve: 1st speed 1/min: 500 Oveflow : 41...83 cm3/10s: (26...98) quantity 2nd speed 1/min: 1050 Overflow : 55...138 quantity cm3/10s: (40...153) Delivery-quant. and breakaway char .: 1/min: 1200 1st speed Del.quantity cm3/: 0.0...3.0 1000H.: -1/min: 1170 2nd speed Del.quantity cm3/: 0.0...15.0 1000H.: -1/min: 1130 cm3/: 15.0...55.0 3rd specu Del.quantity cms/: 1000H.: -3rd speed 4th speed 1/min: 1100 Del.quantity cm3/: 52.0...58.0 1000H.: (49.0...61.0) 1/min: 1050 5th speed Del.quantity cm3/: 68.5...71.5 1000H.: (67.0...73.0) 6th speed 1/min: 900
Del.quantity cm3/: 71.5...74.5
1000H.: (69.5...74.5)
7th speed 1/min: 750
Del.quantity cm3/: 75.0...76.0
1000H.: (72.5...78.5) 8th speed 1/min: 500 Del.quantity cm3/: 59.5...67.5 1000H: (57.5...69.5) Zero delivery (stop): Mech. shutoff: Speed 1/min: 1050 Del.quantity cm3/: 0..3 1000H.: -Electr. shutoff: Speed 1/min: 375 ELAB volt: 12.0 Del.quantity cm3/: 0.0...3.0 1000H.: max. Idle delivery: 1/min: 375 1st speed Del.quantity cm3/: 10.0..12.0 1000H.: (6.0...16.0)

Del.quantity cm3/: 0.0...4.0 1000H.: -Automatic starting fuel delivery: 1/min: 130 1st speed Del.quantity cm3/: -1000H: 60.0 ind. 1/min: 240 2nd speed Del.quantity cm3/: - max. 1000H: 60.0 Shutoff electromagnet: Cut-in min. voltage : 10.0 Rated voltage : 12.0 Mounting and assembly dimensions: Designation mm KF : 5.0...5.4 MS : 0.8...1.2 mm SVS max. mm XK mm XL mm : -Remarks:

2nd speed

1/min: 450

Note inst. in remarks column

Test sheet : REN 2,0 P Edition : 10.03.89

replaces

Calibrating oil : ISO 4113

Injection pump : VE 4/ 8F2300 R317

Type number : 0 460 484 020

Customer-specific information

Customer

: RNUR

Engine

: F8Q-A06

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40...48 : 42...50 electronically

Inlet press., bar: 0,35

Calibrating nozzle-holder

assembly : 1 688 901 022

Opening

bar: 130...133 pressure

Test inj. tubing : 1 680 750 073

Outside diameter : 6 x Wall thickness : 2 x Length mm: 450

Start of delivery Prestroke mm : -(from BDC): -

Indicator setting:

Piston stroke mm: 1.0 Outlet : A

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1250 Speed Setting value mm: 3,8...4,2

KSB solenoid-operated valve volt: -

Supply-pump pressure:

D27

1/min: 1250 Speed Setting value bar: 4,5...5,1

KSB solenoid-operated valve volt: -

Full-load del. w/out charge press.:

1/min: 1250 Speed

Del.quantity cm3/ 1000H.: 31,5...32,5

KSB solenoid-operated valve volt: cm3/: 2,5 Dispersion 1000H.: (3,0)

Low-idle speed regulation:

Speed 1/min: 400

Del.quantity cm3/ 1000H.: 4,0...8,0

KSB solenoid-operated valve volt: cm3/: 2,5 Dispersion 1000H.: (3,0)

Residual-Delivery Setting Speed 1/min: 500 Del.quantity cm3/ 1000H.: 1,0...5,0

KSB-Solenoid-Operated valve Volt : -

Full-load speed regulation:

1/min: 2450 Speed

Del.quantity cm3/ 1000H: 24,0...30,0

KSB solenoid-operated valve volt: -

Start:

1/min: 100 Speed Del.quantity :-mind cm3/1000H.: 40,0 KSB solenoid-operated valve volt: -

Load-dependent start of delivery:

1/min: 1250 Speed KSB solenoid operated valve volt: -

Inspection pump test specifications Test specifications in parentheses

Timing-device characteristic:

TD travel mm: 0,32,7	+ Overflow : 55138 + quantity cm3/10s: (40153)
KSB solenoid-operated	Delivery-quant. and breakaway char.
valve volt: 12,0	†
2nd speed 1/min: 500	+ 1st speed 1/min: 2950
TD travel mm: 1,64,0	+ KSB solenoid-operated
mm: -	+ valve volt: -
KSB solenoid-operated	† Del.quantity cm3/: 0,05,0
_valvevolt: 12,0	1000H.: (0,05,0)
3rd speed 1/min: 750	+ 2nd speed 1/min: 2650
TD travel mm: 1,62,4	+ KSB solenoid-operated
mm: (1,32,7)	+ valve volt: -
KSB solenoid-operated	- Del.quantity cm3/: 8,016,0
valve volt: -	+ _ 1000H.: (7,017,0)
4th speed 1/min: 1250	+ 3rd speed 1/min: 2450
TD travel mm: 3,84,2	T Sid speed 1/111111. 2430
mm: (3,34,7)	+ KSB solenoid-operated
KSB solenoid-operated	+ valve volt: -
Nob social of a peraced	Del.quantity cm3/: 24,030,0 1000H.: (23,031,0)
valve volt: -	† (23,031,0)
5th speed 1/min: 2000	+ 4th speed 1/min: 2250
TD travel mm: 6,67,4	+ KSB solenoid-operated
mm: (6,37,7)	+ valve volt: -
KSB solenoid-operated	+ Del.quantity_cm3/: 31,133,1
valve volt: -	+ 1000H.: (29,834,4)
6th speed 1/min: 2250	+ 5th speed 1/min: 2000
TD travel mm: 7,68,4	+ KSB solenoid-operated
mm: (7,38,7)	+ valve volt: -
KSB solenoid-operated	+ Del.quantity cm3/: 30,532,5
valve volt: -	+ 1000H.: (29,233,8)
	+ 6th speed 1/min: 1625
Supply-pump pressure characteristic:	- KSB solenoid-operated
	+ valve volt: -
1st speed 1/min: 750	+ Del.quantity cm3/: 29,932,9
Supply-pump	+ 1000H.: (29,133,7)
pressure bar: 3,13,7	+ 7th speed 1/min: 1250
KSB solenoid-operated	+ KSB solenoid-operated
valve volt: -	+ valve volt: -
2nd speed 1/min: 1250	
Supply-pump	Del.quantity cm3/: 31,532,5
pressure bar: 4,55,1	1000H.: (29,734,3)
KSB solenoid-operated	+ 8th speed 1/min: 750
valve volt: -	+ KSB solenoid-operated
3rd speed 1/min: 2250	+ valve volt: -
	+ Del.quantity cm3/: 30,233,2
Supply-pump -	1000H: (29,434,0)
pressure bar: 7,07,6	
KSB solenoid-operated	† Zero delivery (stop):
valve volt: -	†
Assert as a most than the second	†
Overflow quantity at overflow valve:	+ Electr. shutoff:
4	†
1st speed 1/min: 750	+ Speed 1/min: 400
KSB solenoid-operated	+ ELAB volt: -
valve volt: -	+ Del.quantity_cm3/: 0,03,0
Oveflow : 4183	+ max. 1000H.: -
quantity cm3/10s: (2698)	+
2nd speed 1/min: 2250	† Idle delivery:
KSB solenoid-operated	+
valve volt: -	+ 1st speed 1/min: 400
	+
	1

KSB solenoid-operated valve volt: -Del.quantity cm3/: 4,0...8,0 1000H.: (2,0...10,0) High Idle: Speed 1/min: 500 Del.quantity cm3/: 7,7...11,7 1000H.: (5,7...13,7) KSB-Solenod-operated Volt : -Automatic starting fuel delivery: 1st speed 1/min: 210 KSB solenoid-operated valve volt: -Del.quantity cm3/: -ind. 1000H: 45,0 2nd speed 1/min: 310

KSB solenoid-operated valve volt: Del.quantity cm3/: max. 1000H: 45,0

Shutoff electromagnet:

Cut-in

min. voltage : 10,0 Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm : 3,2...3,4 KF mm : 5,3...5,7 MS mm : 1,1...1,5 SVS max. mm : 1,4

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Remarks:

Note inst. in remarks column

Test sheet : WW 1,3 B Edition : 01.02.89

replaces

Calibrating oil : ISO 4113

Injection pump : VE 4/ 8F2450 L331 Type number : 0 460 484 021

Customer-specific information Customer : VOLKSWAGEN

Engine : 1.31 SAUGD., POLO

TEST BENCH REQUIREMENTS

Calibrating oil return temp. °C

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

assembly : 1 688 901 000

Opening

pressure bar: 147...150

Test inj. tubing : 1 680 750 017

: 6 Outside diameter x Wall thickness : 2 x Length mm : 840

Start of delivery Prestroke mm : -(from BDC): -

Injection-pump setting values Test specifications in parentheses

Timing device travel:

1/min: 1500 Speed Setting value mm: 3.9...4.3

Supply-pump pressure:

1/min: 1500 Setting value bar: 5.4...6.0

Full-load del. w/out charge press.:

Speed 1/min : 1500

Del.quantity cm3/

1000H.: 22.5...23.5 cm3/: 2.5

Dispersion 1000H.: (3.0)

Low-idle speed regulation:

Speed 1/min: 425

Del.quantity cm3/ 1000H.: 9.5...11.5 Residual-Delivery Setting

Speed 1/min: 575

Del.quantity cm3/

1000H.: 2.5...3.5

Full-load speed regulation:

Speed 1/min: 2600

Del.quantity cm3/

1000H: 9.0...13.0

Start:

1/min: 100 Speed Del.quantity cm3/1000H.: 32.0 mind

Inspection-pump test specifications Test specifications in parentheses

Timing device characteristic:

1st speed 1/min: 1000

TD travel mm: 1.6...2.4 mm: (1.3...2.7)

2nd speed 1/min: 1500

mm: 3.9...4.3 mm: (3.4...4.8) 1/min: 2200 TD travel

3rd speed

mm: 6.9...7.7 TD travel

mm: (6.6...8.0)

Supply-pump pressure characteristic:

1/min: 800 1st speed

Supply-pump

bar: 3.7...4.3 1/min: 1500 pressure 2nd speed

Supply-pump

bar: 5.4...6.0 1/min: 2450 pressure

3rd speed

Supply-pump

bar: 7.7...8.3 pressure

Overflow quantity at overflow valve:

1st speed 1/min: 800

: 41...83 cm3/10s: (26...98) Oveflow quantity 1/min: 2450 : 55...138 2nd speed Overflow quantity cm3/10s: (40...153) Delivery quant. and breakaway char .: 1st speed 1/min: 2800 Del.quantity cm3/: 0.0...6.0 1000H.: -2nd speed 1/min: 2600
Del.quantity cm3/: 9.0...13.0
1000H.: (7.0...15.0)
3rd speed 1/min: 2550 Del.quantity cm3/: 10.5...20.5 1000H.: (9.5...21.5) 4th speed 1/min: 2450 Del.quantity cm3/: 21.0..23.0 1000H.: (19.8...24.2) 1/min: 1500 5th speed Del.quantity cm3/: 22.5...23.5 1000H.: (20.8...25.2) 6th speed 1/min: 800 Del.quantity cm3/: 18.5...21.5 1000H.: (17.0...23.0) 7th speed 1/min: 600
Del.quantity cm3/: 15.0...20.0
1000H.: (12.5...22.5) Zero delivery (stop): Electr. shutoff: Speed 1/min: 450 ELAB volt: -Del.quantity cm3/: 0.0...3.0 max. 1000H.: -Idle delivery: 1st speed 1/min: 425 Del.quantity cm3/: 9.5...11.5 1000H.: (6.5...14.5) 2nd speed 1/min: 450 Del.quantity cm3/: 5.5...8.5 1000H.: (3.0...11.0) Residual: Speed 1/min: 525 : 3.0...5.0 Del.quantity 1000H.: (1.5...5.5) Automatic starting fuel delivery: 1st speed 1/min: 200 Del.quantity cm3/: -1000H: 30.0 ind.

F03

2nd speed 1/min: 400 Del.quantity cm3/: max. 1000H: 30.0

Shutoff electromagnet:

Cut-in

min. voltage : 10.0 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K mm : 3.2...3.4 KF mm : -MS mm : 1.2...1.6

Remarks:

Note inst. in remarks column

: VWW 2,4 S6 Test sheet Edition : 03.02.89

replaces

Calibrating oil

: ISO 4113

Injection pump : VE 5/ 8F2200 L336 Type number : 0 460 485 001

Customer-specific information

Customer

: AUDI

Engine

: 153-2.4L

Power

k: 60.0 1/mi: 4400 Speed

TEST BENCH REQUIREMENTS

Calibrating oil return temp.

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

: 1 688 901 000 assembly

Opening |

bar: 147...150 pressure

Test ini. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm: 840

Start of delivery Prestroke mm : -

(from BDC): -

Injection pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1250 Setting value mm: 2.7...3.1

KSB solenoid-operated

valve volt: 12.0

Supply-pump pressure:

Speed 1/min: 1250 Setting value bar: 5.7...6.3

KSB solenoid-operated valve volt: 12.0

Full-load del. w/out charge press.:

1/min: 1250 Speed

Del.quantity cm3/ 1000H.: 35.0...36.0

KSB solenoid-operated volt: 12.0 cm3/: 2.0 valve Dispersion 1000H .: -

Low-idle speed regulation:

1/min: 415

Del.quantity cm3/ 1000H.: 7.0...9.0

KSB solenoid-operated volt: 12.0 cm3/: 2.0 valve Dispersion 1000H.: (3.0)

Residual-Delivery Setting Speed 1/min: 540

Del.quantity cm3/ 1000H.: 2.0...3.0

KSB-Solenoid-Operated valve Volt : 12.0

Full-load speed regulation:

1/min: 2525 Speed

Del.quantity cm3/ 1000H: 10.0...14.0

KSB solenoid-operated valve volt: 12.0

Start:

1/min: 100 Speed Del.quantity cm3/1000H.: 35.0

Inspection pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed

1/min: 500 mm: 2.3...2.7 mm: (1.5...3.5) TD travel

KSB solenoid-operated valve volt: -

2nd speed 1/min: 750 TD travel

mm: 0.6...1.4 mm: (0.3...1.7)

KSB solenoid-operated	+	Del.quantity cm3/: 10.014.0
valve volt: 12.0 3rd speed 1/min: 1250 TD travel mm: 2.73.1	+	1000H.: (8.016.0)
3rd speed 1/min: 1250	+	3rd speed 1/min: 2425
TD travel mm: 2.73.1	1	KSB solenoid-operated
mm: (2.23.6)	1	valve volt: 12.0
KSB solenoid-operated	1	Del quantity cm3/: 18 D 28 D
valve volt: 12.0	T	Del.quantity cm3/: 18.028.0 1000H.: (17.029.0)
4th speed 1/min 2000	T	/+h mand 4/min 2200
4th speed 1/min: 2000	+	4th speed 1/min: 2200
TD travel mm: 5.96.7	+	KSB solenoid-operated
mm: (5.67.0)	+	valve volt: 12.0
KSB solenoid-operated	+	Del.quantity cm3/: 29.231.2
valve volt: 12.0	+	· 1000H.: (28.032.4)
	+	5th speed 1/min: 1250
Supply-pump pressure characteristic:	†	KSB solenoid-operated
	1	valve volt: 12.0
1st speed 1/min: 500	1	
Supply-pump	1	Del.quantity cm3/: 35.036.0 1000H.: (33.237.7)
pressure bar: 5.16.3	Ι	6th speed 1/min: 750
KSB solenoid-operated	T	VCD palencial connected
Nob social of the control of the con	Ť	KSB solenoid-operated
valve volt: - 2nd speed 1/min: 750	+	valve volt: 12.0
Zna speed 1/min: 750	+	Del.quantity cm3/: 30.333.7
Supply-pump	+	1000H.: (29.235.2
pressure bar: 4.65.2	+	7th speed 1/min: 500
KSB solenoid-operated	+	KSB solenoid-operated
valve volt: 12.0	+	valve volt: 12.0
3rd speed 1/min: 1250	1	Del.quantity cm3/: 29.534.5
Supply-pump	1	1000H.: (27.037.0)
pressure bar: 5,76,3	1	100011. (21.01.131.0)
KSB solenoid-operated	T	Topo dol ivony (otan).
valve volt: 12.0	T	Zero delivery (stop):
/Ab amond 4/min 2200	Ť	
4th speed 1/min: 2200	Ŧ	
4th speed 1/min: 2200 Supply-pump	Ī	Electr. shutoff:
4th speed 1/min: 2200 Supply-pump pressure bar: 7.78.3	‡ ‡	
4th speed 1/min: 2200 Supply-pump pressure bar: 7.78.3 bar: (7.58.5)	+++++++++++++++++++++++++++++++++++++++	Electr. shutoff: Speed 1/min: 415
4th speed 1/min: 2200 Supply-pump pressure bar: 7.78.3 bar: (7.58.5)	+++++++	Speed 1/min: 415
4th speed 1/min: 2200 Supply-pump pressure bar: 7.78.3 bar: (7.58.5) KSB solenoid-operated		Speed 1/min: 415 ELAB volt: -
4th speed 1/min: 2200 Supply-pump pressure bar: 7.78.3 bar: (7.58.5)		Speed 1/min: 415 ELAB volt: - Del.quantity cm3/: 0.03.0
4th speed 1/min: 2200 Supply-pump pressure bar: 7.78.3 bar: (7.58.5) KSB solenoid-operated valve volt: 12.0	╿╸╿╸┩╸┩╸┩╸┩╺┩╺┩╸┩	Speed 1/min: 415 ELAB volt: -
4th speed 1/min: 2200 Supply-pump pressure bar: 7.78.3 bar: (7.58.5) KSB solenoid-operated	╿╸┩ ╸╉╸╉╸╃╸╃╺╂╺╂╸╃╸┩	Speed 1/min: 415 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: -
4th speed 1/min: 2200 Supply-pump pressure bar: 7.78.3 bar: (7.58.5) KSB solenoid-operated valve volt: 12.0 Overflow quantity at overflow valve:	╿╸┤ ╺ ╏ ╸╂╸╂╸╂╍╬╼╬╼╂ ╸ ╉╸┩╸┩╸	Speed 1/min: 415 ELAB volt: - Del.quantity cm3/: 0.03.0
4th speed 1/min: 2200 Supply-pump pressure bar: 7.78.3 bar: (7.58.5) KSB solenoid-operated valve volt: 12.0 Overflow quantity at overflow valve: 1st speed 1/min: 750	╿╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸	Speed 1/min: 415 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery:
4th speed 1/min: 2200 Supply-pump pressure bar: 7.78.3 bar: (7.58.5) KSB solenoid-operated valve volt: 12.0 Overflow quantity at overflow valve: 1st speed 1/min: 750 KSB solenoid-operated	╿╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸┇╸┇╸┇╸┇╸┇╸┇╸┇╸┇╸┇╸┇╸┇╸┇╸	Speed 1/min: 415 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 365
4th speed 1/min: 2200 Supply-pump pressure bar: 7.78.3 bar: (7.58.5) KSB solenoid-operated valve volt: 12.0 Overflow quantity at overflow valve: 1st speed 1/min: 750 KSB solenoid-operated valve volt: 12.0	╿╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸┇╸┇╸┇╸┇╸┇╸┇╸┇╸┇╸┇╸┇╸┇╸┇╸	Speed 1/min: 415 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 365 KSB solenoid-operated
4th speed 1/min: 2200 Supply-pump pressure bar: 7.78.3 bar: (7.58.5) KSB solenoid-operated valve volt: 12.0 Overflow quantity at overflow valve: 1st speed 1/min: 750 KSB solenoid-operated valve volt: 12.0 Oveflow : 4183	╿╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸┇╸┇╸┇╸┇╸┇╸┇╸┇╸┇╸┇╸┇╸┇╸	Speed 1/min: 415 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 365 KSB solenoid-operated valve volt: 12.0
4th speed 1/min: 2200 Supply-pump pressure bar: 7.78.3 bar: (7.58.5) KSB solenoid-operated valve volt: 12.0 Overflow quantity at overflow valve: 1st speed 1/min: 750 KSB solenoid-operated valve volt: 12.0 Oveflow : 4183 quantity cm3/10s: (2698)	╿╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸┇╸┇╸┇╸┇╸┇╸┇╸┇╸┇╸┇╸┇╸	Speed 1/min: 415 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 365 KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: 14.517.5
4th speed 1/min: 2200 Supply-pump pressure bar: 7.78.3 bar: (7.58.5) KSB solenoid-operated valve volt: 12.0 Overflow quantity at overflow valve: 1st speed 1/min: 750 KSB solenoid-operated valve volt: 12.0 Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 2200	╿╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸┇╸┇╸┇╸┇╸┇╸┇╸┇╸	Speed 1/min: 415 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 365 KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: 14.517.5 1000H.: (12.020.0)
4th speed 1/min: 2200 Supply-pump pressure bar: 7.78.3 bar: (7.58.5) KSB solenoid-operated valve volt: 12.0 Overflow quantity at overflow valve: 1st speed 1/min: 750 KSB solenoid-operated valve volt: 12.0 Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 2200 KSB solenoid-operated KSB solenoid-operated	╿╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸┇╸┇╸┇╸┇╸┇╸┇╸┇╸┇╸	Speed 1/min: 415 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 365 KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: 14.517.5 1000H.: (12.020.0)
4th speed 1/min: 2200 Supply-pump pressure bar: 7.78.3 bar: (7.58.5) KSB solenoid-operated valve volt: 12.0 Overflow quantity at overflow valve: 1st speed 1/min: 750 KSB solenoid-operated valve volt: 12.0 Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 2200	╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸┇	Speed 1/min: 415 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 365 KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: 14.517.5 1000H.: (12.020.0) 2nd speed 1/min: 415
4th speed 1/min: 2200 Supply-pump pressure bar: 7.78.3 bar: (7.58.5) KSB solenoid-operated valve volt: 12.0 Overflow quantity at overflow valve: 1st speed 1/min: 750 KSB solenoid-operated valve volt: 12.0 Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 2200 KSB solenoid-operated valve volt: 12.0 KSB solenoid-operated valve volt: 12.0	╿╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸┇╸┇	Speed 1/min: 415 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 365 KSB solenoid-operated Valve volt: 12.0 Del.quantity cm3/: 14.517.5 1000H.: (12.020.0) 2nd speed 1/min: 415 KSB solenoid-operated
4th speed 1/min: 2200 Supply-pump pressure bar: 7.78.3 bar: (7.58.5) KSB solenoid-operated valve volt: 12.0 Overflow quantity at overflow valve: 1st speed 1/min: 750 KSB solenoid-operated valve volt: 12.0 Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 2200 KSB solenoid-operated valve volt: 12.0 Overflow : 55138	╿╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏	Speed 1/min: 415 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 365 KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: 14.517.5 1000H.: (12.020.0) 2nd speed 1/min: 415 KSB solenoid-operated valve volt: 12.0
4th speed 1/min: 2200 Supply-pump pressure bar: 7.78.3 bar: (7.58.5) KSB solenoid-operated valve volt: 12.0 Overflow quantity at overflow valve: 1st speed 1/min: 750 KSB solenoid-operated valve volt: 12.0 Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 2200 KSB solenoid-operated valve volt: 12.0 KSB solenoid-operated valve volt: 12.0	╿╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏	Speed 1/min: 415 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 365 KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: 14.517.5 1000H.: (12.020.0) 2nd speed 1/min: 415 KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: 7.09.0
4th speed 1/min: 2200 Supply-pump pressure bar: 7.78.3 bar: (7.58.5) KSB solenoid-operated valve volt: 12.0 Overflow quantity at overflow valve: 1st speed 1/min: 750 KSB solenoid-operated valve volt: 12.0 Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 2200 KSB solenoid-operated valve volt: 12.0 Overflow : 55138 quantity cm3/10s: (40153)	╿╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏	Speed 1/min: 415 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 365 KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: 14.517.5 1000H.: (12.020.0) 2nd speed 1/min: 415 KSB solenoid-operated valve volt: 12.0
4th speed 1/min: 2200 Supply-pump pressure bar: 7.78.3 bar: (7.58.5) KSB solenoid-operated valve volt: 12.0 Overflow quantity at overflow valve: 1st speed 1/min: 750 KSB solenoid-operated valve volt: 12.0 Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 2200 KSB solenoid-operated valve volt: 12.0 Overflow : 55138	╿╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏	Speed 1/min: 415 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 365 KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: 14.517.5 1000H.: (12.020.0) 2nd speed 1/min: 415 KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: 7.09.0 1000H.: (4.012.0)
4th speed 1/min: 2200 Supply-pump pressure bar: 7.78.3 bar: (7.58.5) KSB solenoid-operated valve volt: 12.0 Overflow quantity at overflow valve: 1st speed 1/min: 750 KSB solenoid-operated valve volt: 12.0 Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 2200 KSB solenoid-operated valve volt: 12.0 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.:	╿╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏	Speed 1/min: 415 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 365 KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: 14.517.5 1000H.: (12.020.0) 2nd speed 1/min: 415 KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: 7.09.0
4th speed 1/min: 2200 Supply-pump pressure bar: 7.78.3 bar: (7.58.5) KSB solenoid-operated valve volt: 12.0 Overflow quantity at overflow valve: 1st speed 1/min: 750 KSB solenoid-operated valve volt: 12.0 Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 2200 KSB solenoid-operated valve volt: 12.0 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 2700	╿╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏	Speed 1/min: 415 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 365 KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: 14.517.5 1000H.: (12.020.0) 2nd speed 1/min: 415 KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: 7.09.0 1000H.: (4.012.0) Residual:
4th speed 1/min: 2200 Supply-pump pressure bar: 7.78.3 bar: (7.58.5) KSB solenoid-operated valve volt: 12.0 Overflow quantity at overflow valve: 1st speed 1/min: 750 KSB solenoid-operated valve volt: 12.0 Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 2200 KSB solenoid-operated valve volt: 12.0 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 2700 KSB solenoid-operated VSB solenoid-operated	┤╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏	Speed 1/min: 415 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 365 KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: 14.517.5 1000H.: (12.020.0) 2nd speed 1/min: 415 KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: 7.09.0 1000H.: (4.012.0) Residual: Speed 1/min: 490
4th speed 1/min: 2200 Supply-pump pressure bar: 7.78.3 bar: (7.58.5) KSB solenoid-operated valve volt: 12.0 Overflow quantity at overflow valve: 1st speed 1/min: 750 KSB solenoid-operated valve volt: 12.0 Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 2200 KSB solenoid-operated valve volt: 12.0 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 2700 KSB solenoid-operated valve volt: 12.0	╿╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸┇╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸	Speed 1/min: 415 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 365 KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: 14.517.5 1000H.: (12.020.0) 2nd speed 1/min: 415 KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: 7.09.0 1000H.: (4.012.0) Residual: Speed 1/min: 490 Del.quantity : 2.54.5
4th speed 1/min: 2200 Supply-pump pressure bar: 7.78.3 bar: (7.58.5) KSB solenoid-operated valve volt: 12.0 Overflow quantity at overflow valve: 1st speed 1/min: 750 KSB solenoid-operated valve volt: 12.0 Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 2200 KSB solenoid-operated valve volt: 12.0 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 2700 KSB solenoid-operated valve volt: 12.0 Delivery-quantity cm3/: 0.06.0	╎╸╅╸┩╸┩╸┩╸┩╸┩╸┩╸┩╸┩╸┩╸╂╸╂╸╂╸╂╸╏╸┩╸┩╸┩╸┩╸┩╸┩	Speed 1/min: 415 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 365 KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: 14.517.5 1000H.: (12.020.0) 2nd speed 1/min: 415 KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: 7.09.0 1000H.: (4.012.0) Residual: Speed 1/min: 490
4th speed 1/min: 2200 Supply-pump pressure bar: 7.78.3 bar: (7.58.5) KSB solenoid-operated valve volt: 12.0 Overflow quantity at overflow valve: 1st speed 1/min: 750 KSB solenoid-operated valve volt: 12.0 Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 2200 KSB solenoid-operated valve volt: 12.0 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 2700 KSB solenoid-operated valve volt: 12.0	╿╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏	Speed 1/min: 415 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 365 KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: 14.517.5 1000H.: (12.020.0) 2nd speed 1/min: 415 KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: 7.09.0 1000H.: (4.012.0) Residual: Speed 1/min: 490 Del.quantity : 2.54.5 1000H.: (1.06.0)
4th speed 1/min: 2200 Supply-pump pressure bar: 7.78.3 bar: (7.58.5) KSB solenoid-operated valve volt: 12.0 Overflow quantity at overflow valve: 1st speed 1/min: 750 KSB solenoid-operated valve volt: 12.0 Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 2200 KSB solenoid-operated valve volt: 12.0 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 2700 KSB solenoid-operated valve volt: 12.0 Delivery-quantity cm3/: 0.06.0 1000H.: -	╿╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸┇╸┇╸┇╸┇╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸┇	Speed 1/min: 415 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 365 KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: 14.517.5 1000H.: (12.020.0) 2nd speed 1/min: 415 KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: 7.09.0 1000H.: (4.012.0) Residual: Speed 1/min: 490 Del.quantity : 2.54.5 1000H.: (1.06.0) KSB-Solenoid-operated
4th speed 1/min: 2200 Supply-pump pressure bar: 7.78.3 bar: (7.58.5) KSB solenoid-operated valve volt: 12.0 Overflow quantity at overflow valve: 1st speed 1/min: 759 KSB solenoid-operated valve volt: 12.0 Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 2200 KSB solenoid-operated valve volt: 12.0 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 2700 KSB solenoid-operated valve volt: 12.0 Delivery-quant. and breakaway char.: 1st speed 1/min: 2700 KSB solenoid-operated valve volt: 12.0 Deliquantity cm3/: 0.06.0 1000H.: - 2nd speed 1/min: 2525	╿╌╏╌╏╌╏╌╏╌╏╌╏╌╏┈╏┈╏┈╏┈╏┈╏┈╏┈╏┈╏┈╏┈┇┈╏┈┇┈╏	Speed 1/min: 415 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 365 KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: 14.517.5 1000H.: (12.020.0) 2nd speed 1/min: 415 KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: 7.09.0 1000H.: (4.012.0) Residual: Speed 1/min: 490 Del.quantity : 2.54.5 1000H.: (1.06.0)
4th speed 1/min: 2200 Supply-pump pressure bar: 7.78.3 bar: (7.58.5) KSB solenoid-operated valve volt: 12.0 Overflow quantity at overflow valve: 1st speed 1/min: 750 KSB solenoid-operated valve volt: 12.0 Oveflow : 4183 quantity cm3/10s: (2698) 2nd speed 1/min: 2200 KSB solenoid-operated valve volt: 12.0 Overflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 2700 KSB solenoid-operated valve volt: 12.0 Delivery-quantity cm3/: 0.06.0 1000H.: -	╿╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸┇╺┇╺╏╸╏╸┇╸┇╸┇╸┇╸┇	Speed 1/min: 415 ELAB volt: - Del.quantity cm3/: 0.03.0 max. 1000H.: - Idle delivery: 1st speed 1/min: 365 KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: 14.517.5 1000H.: (12.020.0) 2nd speed 1/min: 415 KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: 7.09.0 1000H.: (4.012.0) Residual: Speed 1/min: 490 Del.quantity : 2.54.5 1000H.: (1.06.0) KSB-Solenoid-operated

1st speed 1/min: 180 KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: ind. 1000H: 35.0

2nd speed 1/min: 380 KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: max. 1000H: 40.0

Shutoff electromagnet:

Cut-in

min. voltage : 10.0 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

KF mm : 3.1...3.5
KF mm : K-OT
MS mm : 1.2...1.6
SVS max. mm : -

Remarks:

Note inst. in remarks column

Test sheet : FIA 1,7 P5 Edition : 16.01.89

replaces

Calibrating oil : ISO 4113

Injection pump : VE 4/ 9F2100 R343 : 0 460 494 246 Type number

Customer-specific information Customer : FIAT-AUTO

Engine : M710 DT 19 D

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

assembly : 1 688 901 022

Opening 1

bar: 130...133 pressure

Test inj. tubing : 1 680 750 073

Outside diameter : 6 x Wall thickness : 2 mm: 450 x Length

Injection pump setting values Test specifications in parentheses

Timing device travel:

Speed 1/min: 1500 Charge press. hPa: 1000 Setting value mm: 5,5...5,9

KSB solenoid-operated valve volt: 12,0

Supply-pump pressure:

Speed 1/min: 1500 Charge press. hPa: 1000 Setting value bar: 5,3...5,9

KSB solenoid-operated valve volt: 12.0 Full-load del. with charge press.:

Speed 1/min: 1500 Charge press. hPa: 1000

Del.quantity cm3/ 1000H.: 52,0...53,0

KSB solenoid-operated volt : 12,0 cm3/ : 2,5 valve Dispersion 1000H : (2,5)

Full-load del. w/out charge press.:

1/min : 600 Speed

Del.quantity cm3/ 1000H.: 40,0...41,0

KSB solenoid-operated valve volt: 12,0

Low-idle speed regulation:

Speed 1/min: 400 Del.quantity cm3/ 1000H.: 11,0...15,0

KSB solenoid-operated volt: 12.0 cm3/: 2.5 1000H.: (2,5) valve Dispersion

Residual-Delivery Setting Speed 1/min: 700

Del.quantity cm3/

1000н.: 4,0...6,0

KSB-Solenoid-Operated valve Volt : 12.0

Full-load speed regulation:

1/min: 2300 Speed Charge press. hPa: 1000

Del.quantity cm3/

1000H: 30,0...36,0

KSB solenoid-operated valve volt: 12.0

Start:

Speed 1/min: 100 Del.quantity cm3/1000H.: 55,0 mind KSB solenoid-operated valve volt: 12,0

Load-dependent start of delivery:

Speed 1/min: 1500

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

		0
	1	Oveflow : 4183 quantity cm3/10s: (2698)
1st speed 1/min: 500	I	2nd speed 1/min: 2100
Charge press. hPa: 1000	+	Charge press. hPa: 1000
TD travel mm: 3,24,8	+	KSB solenoid-operated
mm: (2,55,5)	+	valve volt: 12,0
KSB solenoid-operated	+	Overflow : 55138
valve volt: -	†	quantity cm3/10s: (40153)
2nd speed 1/min: 1000 Charge press. hPa: 1000	Ť	Not from the and header the second
TD travel mm: 2,55,5	I	Delivery-quant. and breakaway char.:
TD travel mm: 2,55,5 mm: (2,55,5)	I	1st speed 1/min: 800
KSB solenoid-operated	+	Charge air pressure-setting
valve volt: -	+	point hPa: 400
3rd speed 1/min: 800	+	KSB solenoid-operated
Charge press. hPa: 1000	+	valve volt: 12,0
TD travel mm: 1,82,6	+	Del.quantity cm3/: 43,544,5 1000H.: (41,546,5)
mm: (1,52,9)	. †	1000H.: (41,546,5)
KSB solenoid-operated valve volt: 12,0	Ť	2nd speed 1/min: 2650
4th speed 1/min: 1500	Ī	Charge press. hPa: 1000
Charge press. hPa: 1000	I	KSB solenoid-operated valve volt: 12,0
TD travel mm: 5,55,9	1	Del quantity cm3/: 0.0 7.0
mm: (5,26,2)	1	Del.quantity cm3/: 0,07,0 1000H.: -
KSB solenoid-operated	+	3rd speed 1/min: 2450
valve volt: 12,0	÷	Charge press. hPa: 1000
5th speed 1/min: 2100	+	KSB solenoid-operated
Charge press. hPa: 1000	+	valve volt: 12,0
TD travel mm: 8,29,0	+	Del.quantity_cm3/: 12,020,0
mm: (7,99,3) KSB solenoid-operated	+	1000H.: (11,021,0)
valve volt: 12,0	Ī	4th speed 1/min: 2300
vacve vocc. 12,0	I	Charge press. hPa: 1000 KSB solenoid-operated
Supply-pump pressure characteristic:	1	valve volt: 12,0
and the state of t	+	Del.quantity cm3/: 30,036,0
1st speed 1/min: 800	+	1000H.: (29,037,0)
Charge press. hPa: 1000	+	5th speed
Supply-pump	+	Charge press. hPa: 1000
pressure bar: 3,23,8	+	KSB solenoid-operated
KSB solenoid-operated	†	valve volt: 12,0
valve volt: 12,0 2nd speed 1/min: 1500	Ī	Del.quantity cm3/: 50,553,5 1000H.: (49,554,5)
Charge press. hPa: 1000	I	6th speed 1/min: 1500
Supply-pump	1	Charge press. hPa: 1000
pressure bar: 5,35,9	+	KSB solenoid-operated
KSB solenoid-operated	+	valve volt: 12.0
valve volt: 12,0	+	Del.quantity cm3/: 52,053,0
3rd speed 1/min: 2100	+	1000H.: (50,554,5)
Charge press. hPa: 1000	+	7th speed 1/min: 800
Supply-pump hant 7.0 7.4	+	Charge press. hPa: 1000
pressure bar: 7,07,6 KSB solenoid-operated	T	KSB solenoid-operated
valve volt: 12,0	I	valve volt: 12,0
vacve vocc. 12,0	I	Del.quantity cm3/: 55,558,5 1000H.: -
Overflow quantity at overflow valve:	1	8th speed 1/min: 800
	1	Charge press. hPa: 400
1st speed 1/min: 800	†	KSB solenoid-operated
Charge press. hPa: 1000	+	valve volt: 12,0
KSB solenoid-operated	+	Del.quantity cm3/: 43,544,5
valve volt: 12,0	+	1000H: (41,546,5)

9th speed 1/min: 800 KSB solenoid-operated valve volt: 12,0 cm3/: 37/0...39,0 1000H: (35,5...40,5) Del.quantity 1/min: 600 10th speed KSB solenoid-operated valve volt: 12,0 Del.quantity cm3/: 40,0...41,0 1000H: (38,0...43,0) Zero delivery (stop): Electr. shutoff: Speed 1/min: 400 ELA8 volt: -Del.quantity cm3/: 0,0...3,0 max. 1000H.: -Idle delivery: 1/min: 400 1st speed KSB solenoid-operated volt: 12,0 valve Del.quantity cm3/: 11,0..15,0 1000H.: (9,5...16,5) Residual: Speed 1/min: 500 Speed Del.quantity . - 1000H.: -: 4,8...7,8 KSB-Solenoid-operated valve Volt: 12,0 Automatic starting fuel delivery: 1st speed 1/min: 220 KSB solenoid-operated volt: 12,0 valve Del.quantity cm3/: -ind. 1000H: 57,0 2nd speed 1/min: 300 KSB solenoid-operated valve volt: 12,0 Del.quantity cm3/: - max. 1000H: 48,0 Shutoff electromagnet: Cut-in min. voltage : 10,0 Rated voltage : 12,0 Mounting and assembly dimensions: Designation

E09

K mm : 3,2...3,4 KF mm : 5,6...6,0 MS mm : 1,0...1,4

Remarks:

Correction at adjusting nut (46)

Unscrew KSB ball valve 2 mm

Note inst. in remarks column

Test sheet : REN 2,0 01 Edition : 01.02.89

replaces

Calibrating oil : ISO 4113

Injection pump : VE 4/ 9F2350 R309-1

Type number : 0 460 494 247

Customer-specific information

Customer : RNUR

Engine : J8S - 740

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

assembly : 1 688 901 022

Opening

pressure bar : 0.35

Test inj. tubing : 1 680 750 073

Outside diameter : 6 x Wall thickness : 2 x Length

Start of delivery Prestroke mm : -(from BDC): -

Injection-pump setting values Test specifications in parentheses

Timing device travel:

1/min: 1125 Speed Setting value mm: 2.6...3.0

Supply-pump pressure:

1/min: 1125 Setting value bar: 4.2...4.8

Full-load del. w/out charge press.:

Speed 1/min: 1125

Del.quantity cm3/ 1000H.: 36.5...37.5 Dispersion cm3/: 2.5 1000H.: (3.0)

Low-idle speed regulation:

Speed 1/min: 400

Del.quantity cm3/ 1000H.: 6,0...10,0 Dispersion cm3/: 2,5 1000H.: (3,0)

Residual-Delivery Setting Speed 1/min: 500

Del.quantity cm3/

1000H.: 1,0...5,0

Full-load speed regulation:

Speed 1/min: 2500

Del.quantity cm3/

1000H: 20.0...26.0

Start:

Speed 1/min: 100 Del.quantity cm3/1000H.: 52.0 mind

Load-dependent start of delivery:

Speed 1/min: 1125

Inspection-pump test specifications Test specifications in parentheses

Timing device characteristic:

1/min: 800 1st speed

mm: 0.7...1.5 mm: (0.4...1.8) TD travel

2nd speed 1/min: 1125

TD travel mm: 2.6...3.0

mm: (2.1...3.5) 1/min: 2000 3rd speed

mm: 6.9...7.7 mm: (6.6...8.0) TD travel

Supply-pump pressure characteristic:

1/min: 800 1st speed

Supply-pump

bar: 3.1...3.7 1/min: 1125 pressure

2nd speed Supply-pump

bar: 4.2...4.8 pressure

1/min: 2000 3rd speed

E10

Supply-pump bar: 6.5...7.1 pressure Overflow quantity at overflow valve: 1st speed 1/min: 800 Oveflow : 41...83 cm3/10s: (26...98) quantity 1/min: 2250 : 55...138 2nd speed Overflow quantity cm3/10s: (40...153) Delivery-quant. and breakaway char .: 1/min: 2750 1st speed Del.quantity cm3/: 0.0...5.0 1000H.: -2nd speed 1/min: 2650
Del.quantity cm3/: 2.0...10.0
1000H.: (1.0...11.0)
3rd speed 1/min: 2250
Del.quantity cm3/: 34.3...36.3
1000H.: (33.0...37.6) 1/min: 1750 4th speed Del.quantity cm3/: 34.0...36.0 1000H.: (32.7...37.3) 5th speed 1/min: 1125 Del.quantity cm3/: 36.5...37.5 1000H.: (34.7...39.3) 6th speed 1/min: 800 Del.quantity cm3/: 33.5...36.5 1000H.: (32.7...37.3) Zero delivery (stop): Electr. shutoff: 1/min: 400 Speed ELAB volt: -Del.quantity cm3/: 0.0...3.0 max. 1000H.: -Idle delivery: 1/min: 400 1st speed Del.quantity cm3/: 6,0...10,0 1000H.: (4,0...12,0) High Idle: Speed 1/min: 500 Del.quantity cm3/: 7,7...11,7 1000H.: (5,7...13,7) Residual: Speed Del.quantity 1000H.: -Speed 1/min: 500 : 1,0...5,0

Automatic starting fuel delivery:

1st speed 1/min: 210 Del.quantity cm3/: ind. 1000H: 45.0

2nd speed 1/min: 310 Del.quantity cm3/: - max. 1000H: 45.0

Shutoff electromagnet:

Cut-in

min. voltage : 10.0 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

KF mm : 3.2...3.4
KF mm : 5.3...5.7
MS mm : 1.3...1.7
SVS max. mm : 2.3

Remarks:

Note inst. in remarks column

: REN 2,0 02 Test sheet Edition : 01.02.89

replaces

Calibrating oil : ISO 4113

: VE 4/ 9F2350 R309-2 Injection pump

: 0 460 494 251 Type number

Customer-specific information Customer : RNUR

Engine : J8S-736 , 740

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0.35

Calibrating nozzle-holder

assembly : 1 688 901 022

Opening

bar: 130...133 pressure

Test inj. tubing : 1 680 750 073

Outside diameter x Wall thickness : 2 x Length mm : 450

Start of delivery Prestroke mm : -(from BDC): -

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1125 Setting value mm: 2.6...3.0

Supply-pump pressure:

1/min: 1125 Setting value bar: 4.2...4.8

Full-load del. w/out charge press.:

1/min : 1125 Speed

Deliquantity cm3/

1000H.: 36.5...37.5 cm3/: 2.5

Dispersion 1000H.: (3.0)

Low-idle speed regulation:

Speed 1/min: 400

Del.quantity cm3/ 1000H.: 6.0...10.0 Dispersion cm3/: 2.5 1000H.: (3.0)

Residual-Delivery Setting Speed 1/min: 500

Del.quantity cm3/ 1000H.: 1.0...5.0

Full-load speed regulation:

Speed 1/min: 2500

Del.quantity cm3/

1000H: 20.0...26.0

Start:

1/min: 100 Speed Del.quantity cm3/1000H.: 52.0 mind

Load-dependent start of delivery:

Speed 1/min: 1125

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 800

mm: 0.7...1.5 mm: (0.4...1.8) TD travel

2nd speed 1/min: 1125

TD travel mm: 2.6...3.0 mm: (2.1...3.5)

1/min: 2000 3rd speed

mm: 6.9...7.7 mm: (6.6...8.0) TD travel

Supply-pump pressure characteristic:

1st speed 1/min: 800

Supply-pump

bar: 3.1...3.7 pressure 1/min: 1125 2nd speed

Supply-pump

pressure bar: 4.2...4.8

3rd speed 1/min: 2000

Supply-pump bar: 6.5...7.1 pressure Overflow quantity at overflow valve: 1st speed 1/min: 800 Oveflow : 41...83 cm3/10s: (26...98) 1/min: 2250 quantity 2nd speed : 55...138 Overflow quantity cm3/10s: (40...153) Delivery-quant. and breakaway char .: 1st speed 1/min: 2750 Del.quantity cm3/: 0.0...5.0 1000H.: -2nd speed 1/min: 2650
Del.quantity cm3/: 2.0...10.0
1000H.: (1.0...11.0)
3rd speed 1/min: 2250
Del.quantity cm3/: 34.3...36.3
1000H.: (33.0...37.6) 1/min: 1750 4th speed Del.quantity cm3/: 34.0...36.0 1000H.: (32.7...37.3) 5th speed 1/min: 1125 Del.quantity cm3/: 36.5...37.5 1000H.: (34.7...39.3) 6th speed 1/min: 800 Del.quantity cm3/: 33.5...36.5 1000H.: (32.7...37.3) Zero delivery (stop): Electr. shutoff: Speed 1/min: 400 ELAB voit: -Del.quantity cm3/: 0.0...3.0 max. 1000H.: -Idle delivery: 1/min: 400 1st speed Del.quantity cm3/: 6.0...10.0 1000H.: (4.0...12.0) High Idle: Speed 1/min: 500 Del.quantity cm3/: 7.7...11.7 1000H.: (5.7...13.7)

Automatic starting fuel delivery: 1st speed 1/min: 210 Del.quantity cm3/: -1000H: 45.0 ind. 2nd speed 1/min: 310 Del.quantity cm3/: -max. 1000H: 45.0 max. Shutoff electromagnet: Cut-in min. voltage : 10.0 Rated voltage : 12.0 Mounting and assembly dimensions: Designation : 3.2...3.4 : 5.3...5.7 : 1.3...1.7 K KF MS mm SVS max. : 2.3 mm Remarks:

Residual:

Del.quantity

1/min: 500

: 1.0...5.0

Speed

Note inst. in remarks column

: VWW 2.0 K1 : 3.3.89 : 16.1.89 Test sheet Edition replaces Calibrating oil : ISO 4113

Injection pump : VE 5/ 9F2250 L245 : 0 460 495 001 Type number

Customer Part-No. :

Customer-specific information

Customer : W

Engine : 153T-LLK

TEST BENCH REQUIREMENTS

Calibrating oil return temp. °C

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

assembly : 1 688 901 000

Opening

bar: 147...150 pressure

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery Prestroke mm : -(from BDC): -

Injection pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500 Charge press. hPa: 750 Setting value mm: 3,0...3,4 KSB solenoid-operated volt: 12.0 valve

Supply-pump pressure:

1/min: 1500 Speed Charge press. hPa: 750 Setting value bar: 6,0...6,6 KSB solenoid-operated

valve volt: 12.0

Full-load del. with charge press.:

Speed 1/min: 1500

Del.quantity cm3/ 1000H.: 42,7...43,7

KSB solenoid-operated volt : 12,0 cm3/ : 2,5 1000H : (3,0) valve Dispersion

Full-load del. w/out charge press.:

Speed 1/min: 700

Del.quantity cm3/ 1000H.: 27,0...28,0

KSB solenoid-operated valve volt: 12.0

Low-idle speed regulation:

1/min: 390

Del.quantity cm3/ 1000H.: 10,0...12,0

KSB solenoid-operated volt: 12,0 cm3/: 2,5 1000H.: (3,0) valve Dispersion

Residual-Delivery Setting Speed 1/min: 540

Del.quantity cm3/ 1000H.: 2,5...3,5

KSB-Solenoid-Operated valve Volt : 12,0

Full-load speed regulation:

Speed 1/min: 2525

Del.quantity cm3/ 1000H: 16,0...20,0

KSB solenoid-operated valve volt: 12,0

Start:

1/min: 100 Speed

Del.quantity : 37,0...48,0

mind cm3/1000H.: -KSB solenoid-operated volt: 12.0

Inspection pump test specifications Test specifications in parentheses

Timing-device characteristic:

	+	KSB solenoid-operated
A	+	valve volt: 12,0
1st speed 1/min: 500	+	Overflow : 55138
Charge press. hPa: 750	+	quantity cm3/10s: (40153)
TD travel mm: 2,32,7	+	
mm: 1,53,5	+	Delivery-quant. and breakaway char.
2nd speed 1/min: 1000	1	bettery danier and breakandy char.
Charge press. hPa: 750	1	1st speed
TD travel mm: 0,81,6	1	
mn: (0,51,9)	T	Charge-air pressure-setting
KSB solenoid-operated	T	point hPa: 750
volve vol+. 12.0	T	KSB solenoid-operated
valve volt: 12,0	+	valve volt: 12,0
3rd speed 1/min: 1500	+	Del.quantity_cm3/: 0,06,0
Charge press. hPa: 750	+	1000H.: (0,06,0)
TD travel mm: 3,03,4 mm: (1,53,9)	+	2nd speed 1/min: 2525
mm: (1,55,9)	+	Charge press. hPa: 750
KSB solenoid-operated	+	KSB solenoid-operated
valve volt: 12,0	+	valve volt: 12,0
4th speed 1/min: 2250	1	Del.quantity cm3/: 16,020,0
Charge press. hPa: 750	1	1000H.: (14,022,0)
TD travel mm: 6,16,9	1	3rd speed 1/min: 2425
mm: (5,87.2)	1	
KSB solenoid-operated	T	Charge press. hPa: 750
	T	KSB solenoid-operated
valve volt: 12,0	十	valve volt: 12,0
Committee manual formation to the state of t	+	Del.quantity cm3/: 25/535/5 1000H.: (24/536/5)
Supply-pump pressure characteristic:	+	1000H.: (24,536,5)
.	+	4th speed 1/min: 2250
1st speed 1/min: 500	+	Charge press. hPa: 750
Charge press. hPa: 750	+	KSB solenoid-operated
Supply-pump	1	valve volt: 12.0
pressure bar: 5,26,4	1	valve volt: 12,0 Del.quantity cm3/: 36,538,5 1000H.: (35,339,7)
2nd speed 1/min: 700	1	1000H · (35 3 30 7)
Charge press. hPa: 750	\perp	5th speed 1/min: 1500
Supply-pump	T	
	T	Charge press. hPa: 750
pressure bar: 4,14,7	T	KSB solenoid-operated
KSB solenoid-operated	+	valve volt: 12,0
_valvevolt: 12,0	†	Del.quantity cm3/: 42,743,7 1000H.: (41,045,4)
3rd speed 1/min: <u>15</u> 00	+	1000H.: (41,045,4)
Charge press. hPa: 750	+	6th speed 1/min: 850
Supply-pump	+	Charge press. hPa: 750
pressure bar: 6,06,6	+	KSB solenoid-operated
KSB solenoid-operated	+	valve volt: 12,0
valve volt: 12,0	+	Del.quantity cm3/: 33.534.5
4th speed 1/min: 2250	1	Del.quantity cm3/: 33,534,5 1000H.: (31,037,0)
Charge press. hPa: 750	1	7th speed 1/min: 700
Supply-pump	\perp	KSB solenoid-operated
pressure bar: 7,78,3	1	valve volt: 12,0
KSB solenoid-operated	T	
	T	Del.quantity_cm3/: 27,028,0
valve volt: 12,0	†	1000H.: (24,530,5)
0	†	8th speed 1/min: 700
Overflow quantity at overflow valve:	+	Charge press. hPa: 750
	+	KSB solenoid-operated
1st speed 1/min: 700	+	valve volt: 12,0
KSB solenoid-operated	+	Del.quantity cm3/: 37,040,0
valve volt: 12,0	1	1000H: (35,541,5)
Oveflow : 4183	1	9th speed 1/min: 500
quantity cm3/10s: (2698)	1	KSB solenoid-operated
2nd speed 1/min: 2250	1	valve volt: 12,0
Charge press. hPa: 750	Ι	001 might om 7/2 2/5 20 5
טומו של או בפפי וווימי ואט	T	Del.quantity cm3/: 24,529,5
	+	1000H: (22,032,0)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 415 ELAB volt: -

Del.quantity cm3/: 0,0...3,0 max. 1000H.: -

max.

Idle delivery:

1st speed 1/min: 390 KSB solenoid-operated volt: 12,0

Del.quantity cm3/: 10,0..12,0 1000H.: (5,5...16,5) 2nd speed 1/min: 415

KSB solenoid-operated

valve volt: 12,0 Del.quantity cm3/: 6,0...10,0 1000H.: (2,5...13,5)

Residual:

Speed 1/min: 490

Del.quantity : 5,5..., (0,8...7,8)

KSB-Solenoid-operated Volt: 12,0 valve

Automatic starting fuel delivery:

1st speed 1/min: 190 KSB solenoid-operated

valve volt: 12,0 Del.quantity cm3/: 35,0...85,0 ind. 1000H: 35,0

2nd speed 1/min: 390 KSB solenoid-operated

valve volt: 12,0 Del.quantity cm3/: 15,0...35,0 max. 1000H: 35,0

Shutoff electromagnet:

Cut-in

min. voltage : 10,0 Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K : K1 KF : m MS

: 1,6...2,0 mm

SVS max. mm

Remarks:

Operate control lever after each manifold-pressure compensator pressure change.

Correction at adjusting nut (46)

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MB 9,6 n : 07.04.89 Test sheet Edition Replaces Test oil : ISO-4113 Combination no. : 0 401 846 406 Injection pump Pump designation : PE6P100A320LS805 : 0 411 806 148 EP type number Governor Governor design. : RQ300/1150PA436R : 0 421 801 089 Governer no. Customer-spec. information Customer : DAIMLER-BENZ Engine : OM 401 1st version kW : 136.0 Rated speed : 2300 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Overflow quantity min. 1/h: 100...120 Test nozzle holder : 0 681 343 009 assembly Opening | pressure, bar : 172...175 Test Lines : 1 680 750 015 Outside diameter x Wall thickness

x Length mm : 6.00X1.50X600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

: 3.40...3.50 : (3.35...3.55) Prestroke mm Rack travel in mm : 9.00...12.00 : 6-3-5-2-4-1 Firing order Phasina : 0-45-120-165-240-285

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 1130

Rack travel in mm : 10.50...10.60

Del.quantity cm3/: 10.1...10.3

Tolerance $+ - \circ : 0.50 (0.75)$

100 s: (9.9...10.5)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0 Rack travel in mm : 7.8...8.0 Del.quantity cm3/ : 2.5...3.0

100 s: (2.2...3.2)

cm3 : 0.3Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 650 Rack travel in mm : 13.80...14.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1130

Del.quantity : 101.0...105.0)

: 3.00 Spread cm3 1000 : (6.00)

RATED SPEED

1st version

Setting point:

: 650 Speed rpm Rack travel in mm: 14.2

Testing:

1st rack travel in: 9.50

rpm : 1180...1190 Speed

2nd rack travel in: 4.10 Speed rpm : 1250...1280 4th rack travel in: 1400 Speed rpm : 0.00...1.00 LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 7.9 Testina: Speed rpm : 100 Minimum rack trave: 9.40 Speed rpm : 300
Rack travel in mm : 7.80...8.00
Rack travel in mm : 2.00
Speed rpm : 360...400 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1150 Rack travel in m: 10.50...10.60 2nd speed rpm : 650 Rack travel in m: 10.50...10.70 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.50 rpm : 1180...1190 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 110.0...130.0 1000 s: (106.0...134.0) Remarks: **APPLICATION** Omnibus

Note remarks

: MB 11,8 k 1 : 07.04.89 Test sheet Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 401 846 443

Injection pump

Pump designation : PE6P110A720RS371-1

EP type number : 0 411 816 166

Governor

Governor design. : RQV300...1100PA551

Governer no. : 0 421 813 272

Customer-spec. information

Customer : DAIMLER-BENZ

Engine : 0M355A

1st version kW : 206.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 0 681 343 009

Opening |

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.70...11.80

Del.quantity cm3/: 16.0...16.2

100 s: (15.7...16.4)

Spread cm3 : 0.4

100 s: (0.8)

rpm : 300.02nd speed

Rack travel in mm: 6.1...6.3

Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.2)

cm3 : 0.4Spread 100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

: 1.30...1.40 travel mm

rpm : 440 2nd speed travel mm : 2.50...2.90

: 1150 3rd speed rpm

: 8.40...8.60 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1100 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100 Aneroid pressure h: 700

Del.quantity : 100.0...102.0 1000 : (157.5...164.5) Spread : 4.00 cm3

1000 : (8.00)

RATED SPEED

1st version Control Lever

position degrees: 64...68

Testina:

1st rack travel in: 10.70

Speed rpm: 1140...1150 2nd rack travel in: 4.00

Speed rpm : 1215...1245 4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 8...16

Testing:

Speed rpm : 100 Minimum rack trave: 8.00 Speed rpm : 300
Rack travel in mm : 6.20...6.40
Rack travel in mm : 2.00

Speed rpm : 440...500

CONSTANT REGULATION

rpm : 275...330 Speed

Aneroid/Altitude Compensator Test

1st version Setting

Speed rpm : 500 hPa : 700 Pressure

Rack travel mm : 11.70...11.80

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 11.00...11.10

2nd pressure hPa : 390

Rack travel in m: 11.50...11.60

3rd pressure hPa : 350

Rack travel in m: 11.20...11.30

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700 Speed rpm : 600

E20

Del.quantity cm3/: 156.0...160.0 1000 s: (153.0...163.0)

Spread cm3 : 6.001000 s: (9.00)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 135.0...137.0 1000 s: (132.0...140.0)

Spread cm3 : 6.00

1000 s: (9.00)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.70

Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 135.0...155.0

1000 s: (131.0...159.0)

Remarks:

Note remarks

Test sheet : MB 11,8 i 1 : 07.04.89 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 401 846 450

Injection pump

Pump designation : PE6P110A720RS371-1

EP type number : D 411 816 166

Governor

Governor design. : RQV300...1100PA568

Governer no. : 0 421 813 286

Customer-spec. information

Customer : DAIMLER-BENZ

Engine : 0M355A

1st version kW : 206.0 : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 0 681 343 009 assembly

Openina .

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 11.70...11.80

Del.quantity cm3/: 16.0...16.2

100 s: (15.7...16.5)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 300.0 Rack travel in mm : 6.1...6.3 Del.quantity cm3/ : 1.3...1.9

100 s: (1.0...2.1)

cm3 : 0.4Spread 100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

: 1.00...2.00 travel mm

2nd speed rpm : 540

travel mm : 4.40...4.60

3rd speed rpm : 820

travel mm : 5.90...6.20

rpm : 1100 4th speed

travel mm : 8.30...8.50

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 Speed rpm : 1100 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed Aneroid pressure h: 700

Del.quantity : 160.0...162.0 1000 : (157.0...165.0)

: 4.00 Spread cm3 1000 : (8.00) RATED SPEED 1st version Control Lever position degrees: 64...68 Testing: 1st rack travel in: 10.70 Speed rpm : 1140...1150 2nd rack travel in: 4.00 Speed rpm : 1215...1245 4th rack travel in: 1350 Speed rpm : 0.00...1.50 LOW IDLE 1 Control lever position degrees: 12...20 Testing: Speed rpm : 100 Minimum rack trave: 8.00 rpm : 300 Rack travel in mm : 6.20...6.40 CONSTANT REGULATION rpm : 275...330 Speed Aneroid/Altitude Compensator Test 1st version Setting Speed rpm : 500 hPa : 700 Pressure Rack travel mm : 11.70...11.80 Measurement 1/min: 500 Speed 1st pressure hPa :-Rack travel in m: 11.00...11.10 2nd pressure hPa : 390 Rack travel in m: 11.50...11.60 3rd pressure hPa : 350 Rack travel in m: 11.20...11.30 START CUT-OUT Speed 1/min: 220 (240)

FUEL DELIVERY CHARACTERISTICS

rpm : 600

Aneroid pressure h: 700

Del.quantity cm3/: 155.0...159.0 1000 s: (152.0...162.0) Spread cm3 : 6.001000 s: (9.00) Aneroid pressure h: rpm Del.quantity cm3/: 134.0...136.0 1000 s: (131.0...139.0) Spread cm3 : 6.001000 s: (9.00) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.70 Speed rpm : 1140...1150 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 135.0...155.0 1000 s: (131.0...159.0) Remarks: :

E22

Speed

1st version

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : ENA 11,9 h : 29.03.89 : 2.12.88 Edition Replaces Test oil : ISO-4113 Combination no. : 0 401 846 482 Injection pump Pump designation : PE6P120A320RS257 EP type number : 0 411 826 075 Governor Governor design. : RQV250...1100PA680 : 0 421 813 374 Governer no. Customer spec. information Customer : ENASA Engine : 96 T1 AX.BX TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder assembly : 1 688 901 019 Opening 1 pressure, bar : 207...210 Orifice plate diameter mm : 0,8 Test Lines : 1 680 750 067 Outside diameter x Wall thickness x Length mm : 6.00x1.50x1000 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

Phasing : 0-60-120-180-240-300 Tolerance $+ - \circ : 0.50 (0.75)$ Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 1080 Rack travel in mm : 10.00...10.10 Del.quantity cm3/: 18.8...19.0 100 s: (18.5...19.3) Spread cm3 : 0.5100 s: (0.9) rpm : 250.02nd speed Rack travel in mm: 5.5...5.7 Del.quantity cm3/: 1.7...2.3 100 s: (1.4...2.6) Spread cm3 : 0.8100 s: (1.2) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 250 1st speed travel mm : 1.00...1.40 2nd speed rpm : 350 : 1.70...2.30 travel mm rpm : 650 3rd speed travel mm : 4.00...4.60 rpm : 1145 4th speed : 8.30...8.50 travel mm 5th speed rpm : 1225 travel mm : 9.20...9.60 GUIDE SLEEVE POSITION Control-lever position Dearee: -1 rpm : 1130 Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1080 Aneroid pressure h: 900 Del.quantity : 188.0...190.0 1000 : (185.0...193.0)

Firing order

: 1-5-3-6-2-4

per values ___

BEGINNING OF DELIVERY

Prestroke mm

Test pressure, bar: 25...27

Rack travel in mm : 9.00...12.00

: 2.80...2.90

: (2.75...2.95)

Spread മ്പ് : 5.00 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 43...51

Testing:

1st rack travel in: 9.00

Speed rpm : 1140...1150 2nd rack travel in: 4.00

Speed rpm : 1190...1220 4th rack travel in: 1320

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 16...22

Testing:

Speed rpm : 100 Minimum rack trave: 7.10 rpm : 250

Rack travel in mm : 5.50...5.70

CONSTANT REGULATION

rom : 250...380 Speed

TORQUE CONTROL

Dimension a mm : 0.50

Torque control curve - 1st version 1st speed rpm : 1080

Rack travel in m: 10.00...10.10

2nd speed rpm : 650

Rack travel in m: 10.50...10.70

3rd speed rpm : 850

Rack travel in m: 10.20...10.40

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 500 Pressure hPa : 900

Rack travel mm : 10.20...10.40

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 8.70...9.10

2nd pressure hPa : 415

Rack travel in m: 10.00...10.10

3rd pressure hPa : 290

Rack travel in m: 9.20...9.40

START CUT-OUT

Speed 1/min: 170 (150)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm : 650 Del.quantity cm3/: 173.0...179.0 1000 s: (170.0...182.0)

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 128.0...130.0

1000 s: (125.0...133.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.00

Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 130.0...150.0 1000 s: (126.0...154.0)

Rack travel in mm : 19.50...21.00

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

APPLICATION

Special-purpose vehicle

Note remarks

Test sheet : MB 11,6 a : 07.04.89 Edition : 8.6.88 Replaces Test oil : ISO-4113

Combination no. : 0 401 846 494

Injection pump

Pump designation : PE6P100A720RS473 EP type number : 0 411 806 196

Governor

Governor design. : RQ300/1100PA269-1

Governer no. : 0 421 801 237

Customer-spec. information

Customer : DAIMLER-BENZ

Engine : OM 355

1st version kW : 177.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 0 681 343 009 assembly

Openina

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60

: (3.45...3.65)

Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 12.50...12.60

Del.quantity cm3/: 12.0...12.2

100 s: (11.8...12.4)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0 Rack travel in mm : 8.1...8.3 Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.5) cm3 : 0.3Spread

100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed

travel mm

rpm : 300 : 2.30...2.60

2nd speed rpm : 600 travel mm : 6.90...7.10

3rd speed rpm : 1150

: 7.30...7.70 travel mm

rpm : 1200 4th speed

travel mm : 10.00...10.60

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 600 Speed

Rack travel in mm : 13.40...13.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

Del.quantity : 120.0...124.0)

Spread cm3 *:* 3.50 1000 : (6.00) RATED SPEED 1st version Control lever position degrees: 43...51 Testing: 1st rack travel in: 11.50 rpm : 1140...1150 Speed 2nd rack travel in: 4.00 rpm : 1185...1215 Speed 4th rack travel in: 1350 Speed rpm : 0.00...1.50LOW IDLE 1 Control lever position degrees: 13...21 Testing: Speed rpm : 200 Minimum rack trave: 7.50 Speed : 300 rpm Rack travel in mm : 6.00...6.30 Rack travel in mm : 2.00 : 350...390 Speed rom FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 600 Del.quantity cm3/: 110.0...114.0 1000 s: (107.5...116.5) Spread cm3 : 5.001000 s: (7.) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.50 rpm : 1140...1150 Speed STARTING FUEL DELIVERY Speed rpm Del.quantity cm3/: 150.0...170.0 1000 s: (146.0...174.0) Remarks:

Note remarks

: MB 11,6 a 2 : 07.04.89 Test sheet Edition

: 11.85 Replaces Test oil : ISO-4113

Combination no. : 0 401 846 514

Injection pump

Pump designation : PE6P100A720RS473 EP type number : 0 411 806 196

Governor

Governor design. : RQ300/1100PA269-2

Governer no. : 0 421 801 293

Customer-spec. information

Customer : DAIMLER-BENZ

Engine : OM 355

1st version kW : 155.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 0 681 343 009

Opening 1

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 3.50...3.60

: (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1100 1st speed

Rack travel in mm : 11.80...11.90

Del.quantity cm3/: 10.4...10.6

100 s: (10.2...10.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 8.4...8.6 Del.quantity cm3/: 1.7...2.3

100 s: (1.4...2.5)

cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

Speed rpm : 600

Rack travel in mm: 13.40...13.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 104.0...106.0

: (102.0...108.0) 1000

Spread cm3

: 3.50 : (6.00) 1000

RATED SPEED

1st version

Setting point:

Speed rpm Rack travel in mm: 13.6

Testing:

1st rack travel in: 10.80

rpm : 1140...1150 Speed

2nd rack travel in: 4.00 rpm : 1195...1215 Speed 4th rack travel in: 1350 Speed rpm : 0.00...1.50 LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 8.5 Testing: Speed rpm : 100 Minimum rack trave: 10.10 Speed rpm : 300
Rack travel in mm : 8.40...8.60
Rack travel in mm : 2.00 rpm : 440...480 Speed FUEL DELIVERY CHARACTERISTICS 1st version rpm : 600 Speed Del.quantity cm3/: 89.0...93.0 1000 s: (86.5...95.5) cm3 : 5.00 1000 s: (7.00) Spread **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.80 Speed rpm : 1140...1150 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 150.0...170.0 1000 s: (146.0...174.0) Remarks:

Note remarks

: ENA 12,0 a : 29.03.89 : 22.1.88 Test sheet Edition Replaces

Test oil : ISO-4113

Combination no. : 0 401 846 548

Injection pump

Pump designation : PE6P120A320RS257 EP type number : 0 411 826 075

Governor

Governor design. ; RQ250/1100FA877 : 0 421 501 409 Governer no.

Customer-spec. information Customer : ENASA

: 9156.1371 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90

: (2.75...2.95) Rack travel in mm : 9.00...12.00

F01

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance 4 - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1080

Rack travel in mm : 10.60...10.70

Del.guantity cm3/: 20.0...20.2

100 s: (19.7...20.5)

cm3 : 0.5Spread

100 s: (0.9)

2rd speed rpm : 250.0 Rack travel in mm : 5.5..5.7 Del.quantity cm3/ : 1.7..2.3

100 s: (1.4...2.6) Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 550

Rack travel in mm : 15.40...16.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1080Speed Aneroid pressure h: 900

Del.quantity : 200.0...205.0)

: 5.00 Spread cm3

: (9.00) 1000

RATED SPEED

1st version

Setting point:

Speed : 550 rpm Rack travel in mm: 16.0

Testing:

1st rack travel in: 9.60

rpm : 1145...1160 Speed 2nd rack travel in: 4.00

rpm : 1190...1220 Speed

4th rack travel in: 1300

nom : 0.00...1.00Speed

LOW IDLE 1

Setting point w/out bumper spring

rpm : 250 Rack travel in mm : 5.6

Testina:

Speed : 100 rpm Minimum rack trave: 7.10

Speed rpm : 250
Rack travel in mm : 5.50...5.70
Rack travel in mm : 2.00
Speed rpm : 340...380

TORQUE CONTROL

Dimension a mm : 0.20

Torque control curve - 1st version

1st speed rpm : 1080

Rack travel in m: 10.60...10.70

2nd speed rpm : 600

Rack travel in m: 11.10...11.30 3rd speed rpm : 720

Rack travel in m: 10.70...10.90

Aneroid/Altitude Compensator Test

1st version

Setting

rom : 500 hPa : 900 Speed nom Pressure

Rack travel mm : 11.10...11.30

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 8.70...9.10

2nd pressure hPa : 340

Rack travel in m: 9.30...9.40
3rd pressure hPa : 470
Rack travel in m: 10.10...10.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

: 600 Speed rpm Del.quantity cm3/: 182.0...188.0 1000 s: (179.0...191.0)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 130.0...132.0

1000 s: (127.0...135.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.60

Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 130.0...150.0 1000 s: (126.0...154.0)

Rack travel in mm : 19.50...21.00

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

APPLICATION

Special-purpose vehicle

Note remarks

Test sheet : ENA 10,1 d Edition : 07.02.89 Replaces : 9.1.89 Test oil : ISO-4113

Combination no. : 0 401 846 549

Injection pump

Pump designation : PE6P100A820LS503 : 0 411 806 197 EP type number

Governor

Governor design. : RQV250...1000PA811 : 0 421 813 556 Governer no.

Customer-spec, information Customer : FNASA

: 95 T1 AX, BX Enaine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90

: (2.75...2.95) Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4 Phasina : 0-60-120-180-240-300

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 980

Rack travel in mm : 14.20...14.30

Del.guantity cm3/: 16.5...16.7

100 s: (16.3...16.9)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 250.0 Rack travel in mm : 7.7...7.9 Del.quantity cm3/: 1.8...2.2

100 s: (1.5...2.4) cm3 : 0.3

Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed

: 1.00...1.40 travel mm

2nd speed rpm : 400 travel mm

: 2.20...2.80 3rd speed 650

rpm : 4.50...5.10 travel mm

4th speed rpm : 1050

: 8.50...8.70 travel mm

5th speed rpm : 1140

travel mm : 9.70...10.10

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 1040 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 980 Aneroid pressure h: 900

Del.quantity : 100.0...169.0)

: 3.50 Spread стЗ 1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 46...54

Testina:

1st rack travel in: 13.20 Speed rpm : 1040...1050 2nd rack travel in: 4.00

Speed rpm : 1140...1170 4th rack travel in: 1250

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 10...18

Testing:

Speed rpm : 100 Minimum rack trave: 7.50

Speed rpm : 250 Rack travel in mm : 5.90...6.10

CONSTANT REGULATION

rpm : 250...350 Speed

TORQUE CONTROL

Dimension a mm : 0.50

Torque control curve - 1st version

1st speed rpm : 980
Rack travel in m: 14.20...14.30
2nd speed rpm : 550
Rack travel in m: 15.00...15.30

3rd speed rpm : 750

Rack travel in m: 14.80...15.00

4th speed rpm : 850

Rack travel in m: 14.40...14.60

Aneroid/Altitude

Compensator Test

1st version Setting

Speed : 500 rpm hPa : 900 Pressure

Rack travel mm : 14.70...14.90

Measurement

1/min : 500 Speed

1st pressure hPa : -

Rack travel in m: 12.90...13.30

2nd pressure hPa : 400 Rack travel in m: 14.10...14.20

3rd pressure hPa : 300 Rack travel in m: 13.40...13.60

START CUT-OUT

Speed 1/min: 170 (190)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm : 700 Del.quantity cm3/ : 170.0...174.0

1000 s: (168.0...176.0)

Aneroid pressure h: -

Speed rpm: 500 Del.quantity cm3/: 130.0...132.0 1000 s: (127.0...135.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.20

Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 180.0...200.0 1000 s: (176.0...204.0)

LOW IDLE

Speed rpm : 250 Rack travel in mm : 5.90...6.10

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

APPLICATION

Special-purpose vehicle

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks

Test sheet : ENA 10,1 d1 : 07.02.89 Edition : 9.1.89 Replaces Test oil : ISO-4113

Combination no. : 0 401 846 549A

Injection pump

Pump designation : PE6P100A820LS503 EP type number : 0 411 806 197

Governor

Governor design. : RQV250...1000PA811 Governer no. : 0 421 813 556

Customer-spec. information Customer : ENASA

Engine : 95 T1 BV

1st version kW : 165.0 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina .

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

F05

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 980 1st speed

Rack travel in mm : 14.20...14.30

Del.quantity cm3/: 16.5...16.7

100 s: (16.3...16.9)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 250.0Rack travel in mm: 7.7...7.9 Del.quantity cm3/: 1.8...2.2 100 s: (1.5...2.4)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250 : 1.00...1.40 travel mm

2nd speed rpm : 400 : 2.20...2.80 travel mm

rpm : 650 3rd speed travel mm

: 4.50...5.10 rpm : 10504th speed

travel mm : 8.50...8.70

5th speed rpm : 1140

: 9.70...10.10 travel mm

GUIDE SLEEVE POSITION Control-lever position

> Degree: -1 rpm : 1040

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 980 Speed Aneroid pressure h: 900

Del.quantity : (103.0...169.0)

Spread cm3 : 3.50 1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 46...54

Testing:

1st rack travel in: 13.20

rpm : 1030...1040 Speed

2nd rack travel in: 4.00

Speed rpm : 1130...1160 4th rack travel in: 1250 Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 10...18

Testing:

Speed rpm Minimum rack trave: 7.50 rpm : 250

Rack travel in mm : 5.90...6.10

CONSTANT REGULATION

rpm : 250...350 Speed

TORQUE CONTROL

Dimension a mm : 0.50

Torque control curve - 1st version

1st speed rpm : 980

Rack travel in m: 14.20...14.30

2nd speed rpm : 550

Rack travel in m: 15.00...15.30 3rd speed rpm : 750 Rack travel in m: 14.80...15.00

4th speed rpm : 850

Rack travel in m: 14.40...14.60

Aneroid/Altitude Compensator Test

1st version

Settina

Speed : 500 rpm hPa : 900 Pressure

Rack travel mm : 14.70...14.90

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 12.90...13.30

2nd pressure hPa : 400

Rack travel in m: 14.10...14.20 3rd pressure hPa : 300

F06

Rack travel in m: 13.40...13.60

START CUT-OUT

Speed 1/min: 170 (190)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rom

Del.quantity cm3/: 170.0...174.0 1000 s: (168.0...176.0)

Speed rpm: 450
Del.quantity cm3/: 90.0...94.0
1000 s: (88.0...96.0)

Ameroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 130.0...132.0 1000 s: (127.0...135.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.20

Speed rpm : 1030...1040

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 180.0...200.0 1000 s: (176.0...204.0)

LOW IDLE

Speed rpm : 250 Rack travel in mm : 5.90...6.10

Remarks:

Check electrically unlatched starting

fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,

the start position must be reached.

APPLICATION

Special-purpose vehicle

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : ENA 10,1 d2 Edition : 07.02.89 Replaces Test oil : ISO-4113 Combination no. : 0 401 846 549B Injection pump Pump designation : PE6P100A820LS503 : 0 411 806 197 EP type number Governor Governor design. ; RQV250...1000PA811 Governer no. : 0 421 813 556 Customer-spec. information Customer : ENASA Engine : 95 T1 AW 1st version kW : 155.0 : 2000 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly **Opening** : 172...175 pressure, bar Test lines : 1 680 750 015 Outside diameter x Wall thickness x Length mm : 6.00X1.50X600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Prestroke mm

F07

Test pressure, bar: 25...27

Rack travel in mm : 9.00...12.00

: 2.80...2.90

: (2.75...2.95)

Phasing : 0-60-120-180-240-300 Tolerance + - 0 : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 980 Rack travel in mm : 13.30...13.40 Del.quantity cm3/: 15.0...15.2 100 s: (14.8...15.4) Spread cm3 : 0.3100 s: (0.6) 2nd speed rpm : 250.0 Rack travel in mm : 7.7...7.9 Del.quantity cm3/: 1.8...2.2 100 s: (1.5...2.4) Spread cm3 : 0.3100 s: (0.5) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 250 : 1.00...1.40 travel mm 2nd speed rom : 400 travel mm : 2.20...2.80 3rd speed rpm : 650 travel mm : 4.50...5.10 rom : 1050 4th speed : 8.50...8.70 travel mm rpm : 1140 5th speed : 9.70...10.10 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1040 Speed Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 980 Speed Aneroid pressure h: 900 Del.quantity : 150.0...154.0)

Firing order

: 1-5-3-6-2-4

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version Control Lever

position degrees: 46...54

Testing:

1st rack travel in: 12.30 Speed rpm : 1030...1040 2nd rack travel in: 4.00

Speed rpm: 1130...1160 4th rack travel in: 1250

rpm : 0.00...1.00Speed

LOW IDLE 1

Control lever

position degrees: 10...18

Testing:

Speed rpm : 100 Minimum rack trave: 7.50 Speed rpm : 250 Rack travel in mm : 5.90...6.10

CONSTANT REGULATION

riom : 250...350 Speed

TORQUE CONTROL

Dimension a mm : 0.50

Torque control curve - 1st version

1st speed rpm : 980

Rack travel in m: 13.30...13.40 2nd speed rpm : 550

Rack travel in m: 14.00...14.30

3rd speed rpm : 750

Rack travel in m: 13.80...14.00

4th speed rpm : 850

Rack travel in m: 13.50...13.70

Aneroid/Altitude

Compensator Test

1st version Setting

: 500 Speed rpm

hPa : 900

Rack travel mm : 13.30...13.40

Measurement

1/min : 500 Speed

1st pressure hPa : -

Rack travel in m: 12.70...13.00

2nd pressure hPa : 260

Rack travel in m: 13.10...13.20

START CUT-OUT

1/min: 170 (190) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm: 700 Del.quantity cm3/: 143.0...147.0 1000 s: (141.0...149.0)

Speed rpm: 450 Del.quantity cm3/: 89.0...93.0

1000 s: (87.0...95.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 127.0...129.0 1000 s: (124.0...132.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.30

Speed rpm : 1030...1040

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 180.0...200.0

1000 s: (176.0...204.0)

LOW IDLE

Speed rpm

Rack travel in mm : 5.90...6.10

Remarks:

Check electrically unlatched starting

fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,

the start position must be reached.

APPLICATION

Special-purpose vehicle

Note remarks

Test sheet : ENA 10,1 e Edition : 07.02.89 Replaces : 24.6.88 Test oil : ISO-4113

Combination no. : 0 401 846 552

Injection pump

Pump designation : PE6P100A820LS503-1

EP type number : 0 411 806 198

Governor

Governor design: RQ250/1000PA352-1 : 0 421 801 412 Governer no.

Customer-spec. information Customer : ENASA

Engine : 95 T1 AZ,CZ

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90 : (2.85...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4 Phasing : 0-60-120-180-240-300

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 980

Rack travel in mm: 14.20...14.30

Del.guantity cm3/: 16.5...16.7

100 s: (16.3...16.9)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 250.0 Rack travel in mm : 7.8...8.0 Del.quantity cm3/: 1.8...2.2

100 s: (1.5...2.4)

cm3 : 0.3 Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position Degree: -1

rpm : 600 Speed

Rack travel in mm : 16.00...17.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 980 Aneroid pressure h: 900

Del.quantity : 163.0...169.0)

cm3 : 3.50 1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed rpm Rack travel in mm: 16.5

Testing:

1st rack travel in: 13.20 Speed rpm : 1045...1060 2nd rack travel in: 4.00

rpm : 1100...1130 Speed

4th rack travel in: 1200

: 0.00...1.00 Speed rom

LOW IDLE 1

Setting point w/out bumper spring

rpm : 250 Rack travel in mm: 6.0

Testina:

Speed riom : 100 Minimum rack trave: 7.50
Speed rpm : 250
Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00
Speed rpm : 350...390

TORQUE CONTROL

Dimension a mm : 0.40

Torque control curve - 1st version

1st speed rpm : 980

Rack travel in m: 14.20...14.30

2nd speed rpm : 700 Rack travel in m: 15.00...15.50

3rd speed rpm : 825 Rack travel in m: 14.40...14.80

Aneroid/Altitude Compensator Test

1st version

Settina

Speed : 500 rpm hPa : 900 Pressure

Rack travel mm : 14.70...14.90

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 12.90...13.30

2nd pressure hPa : 400

Rack travel in m: 14.10...14.20 3rd pressure hPa : 300

Rack travel in m: 13.40...13.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 Speed rpm : 700

Del.quantity cm3/: 170.0...174.0 1000 s: (168.0...176.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 130.0...132.0 1000 s: (127.0...135.0)

BREAKAWAY

1st version

F10

1mm rack travel less than

full load rack tr: 13.20

rpm : 1045...1060 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 150.0...170.0

1000 s: (146.0...174.0)

LOW IDLE

Speed rpm : 250 Rack travel in mm : 5.90...6.10

Remarks:

Check electrically unlatched starting

fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,

the start position must be reached.

APPLICATION

Special-purpose vehicle

BOSCH INJ. PUMP TEST SPECIFICATIONS : 2.80...2.90 : (2.75...2.95) Prestroke mm Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Note remarks Test sheet : RVI 9,8 h Edition : 30.09.88 Replaces Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : D 401 846 561 Tolerance $+ - \circ : 0.50 (0.75)$ Injection pump Time to cyl. no. : 1 Pump designation : PE6P120A320RS519 : 0 411 826 145 EP type number BASIC SETTING Governor Governor design. : RQ275/1050PA899 1st speed rpm: 1050 Governer no. : 0 421 801 460 Rack travel in mm : 11.00...11.10 Customer-spec. information Customer : RVI Del.quantity cm3/: 16.7...16.9 Engine : MIHS 06.20.45 100 s: (16.4...17.2) 1st version kW : 185.0 Spread cm3 : 0.5: 2100 Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 275 2nd speed Test oil Rack travel in mm: 5.9...6.1 inlet temp. °C Del.quantity cm3/: 1.2...1.8 : 38...42 100 s: (0.9...2.1) Overflow valve cm3 : 0.8 100 s: (1.2) Spread : 1 417 413 025 Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Control-lever position Test nozzle holder Degree: -2 assembly : 1 688 901 019 rpm : 600 Speed Rack travel in mm : 19.20...20.80 **Opening** pressure, bar : 207...210 FULL LOAD DELIV. AT FULL LOAD STOP Orifice plate 1st version diameter mm : 0,8 Speed rpm : 1050 Aneroid pressure h: 700 Del.quantity : 167.0...169.0 Test lines : 1 680 750 067 1000 : (164.0...172.0) : 5.00 Spread cm3 Outside diameter 1900 : (9.00) x Wall thickness x Length mm : 6.00X1.50X1000 RATED SPEED (A) Injection pump setting values 1st version Insp. values in parentheses Set equal delivery quant. Setting point: per values rpm

Rack travel in mm : 20.0

1st rack travel in: 10.00

Testina:

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

rpm : 1110...1125 Speed 2nd rack travel in: 4.00 rom : 1195...1225 Speed 4th rack travel in: 1350 Speed rom : 0.00...1.00LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 275 Rack travel in mm : 5.0 Speed Testing: Speed rpm : 200 Minimum rack trave: 6.70 Speed rpm: 275 Rack travel in mm: 4.90...6.10 Rack travel in mm: 2.00 Speed rom : 275...315 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm Pressure hPa : 700 Rack travel mm : 11.00...11.10 Measurement Speed 1/min: 500 1st pressure hPa : -Rack travel in m: 9.40...9.60 2nd pressure hPa : 260 Rack travel in m: 10.50...10.60 3rd pressure hPa : 220 Rack travel in m: 9.60...9.80 START CUT-OUT 1/min: 195 (215) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 Speed : 750 rpm Del.quantity cm3/: 159.0...165.0 1000 s: (156.0...168.0) Aneroid pressure h: -Speed rpm : 500
Del.quantity cm3/: 104.0...106.0
1000 s: (101.0...109.0)

BREAKAWAY

F12

1st version

1mm rack travel less than

full load rack tr: -1.00 rpm : 1110...1125 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 140.0...160.0 1000 s: (136.0...164.0)

LOW IDLE

Speed rpm : 275

Rack travel in mm: 5.90...6.10
Del.quantity cm3/: 12.0...18.0
1000 s: (9.0...21.0)
Spread cm3: 8.00
1000 s: (12.00)

Remarks:

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks

Test sheet : MB 11,0 c Edition : 07.04.89 Replaces : 4.85 : ISO-4113 Test oil

Combination no. : 0 401 846 723

Injection pump

Pump designation : PE6P110A320LS3805 : 0 411 816 718 EP type number

Governor

Governor design. : RQ300/1150PA187-2R

: 0 421 801 112 Governer no.

Customer-spec. information

Customer : DAIMLER-BENZ

Engine : 0M421

1st version kW : 158.0 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 0 681 343 009

Openina

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

: 4.00...4.10 : (3.95...4.15) Prestroke mm

Rack travel in mm : 9.00...12.00 Firing order : 6-3-5-2-4-1

Phasing : 0-45-120-165-240-285

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 1150

Rack travel in mm : 12.50...12.60

Del.quantity cm3/: 12.2...12.4

100 s: (11.9...12.6)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 300.0Rack travel in mm: 8.3...8.5

Del.quantity cm3/: 1.4...2.0 100 s: (1.1...2.2)

cm3 : 0.4 100 s: (0.7) Spread

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 600 Speed

Rack travel in mm: 13.80...14.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

: 122.0...124.0 Del.quantity 1000 : (119.5...126.5)

: 4.00 Spread cm3

1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed rpm Rack travel in mm: 14.2

Testing:

1st rack travel in: 11.50 Speed rpm : 1190...1200

2nd rack travel in: 4.00 rpm : 1240...1270 Speed 4th rack travel in: 1400 Speed rpm : 0.00...1.00 LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Speed Rack travel in mm: 8.4 Testing: Speed : 100 rpm Minimum rack trave: 9.90 Speed rpm : 300 Rack travel in mm : 8.30...8.50 Rack travel in mm : 2.00 Speed rpm : 430...470 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1150 Rack travel in m: 12.50...12.60 2nd speed rpm : 600 Rack travel in m: 12.50...12.70 FUEL DELIVERY CHARACTERISTICS 1st version : 600 Speed rpm Del.quantity cm3/: 114.0...118.0 1000 s: (111.0...121.0) cm3 : 6.00 1000 s: (9.) Spread BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.50 Speed rpm : 1190...1200 STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 130.0...150.0 1000 s: (126.0...154.0) Remarks:

Note remarks

: MB 11,0 c 1 Test sheet Edition : 4.4.89 : 22.10.86 : ISO-4113 Replaces Test oil

: 0 401 846 749 Combination no.

Injection pump

Pump designation: PE6P110A320LS3805 : 0 411 816 718 EP type number

Governor

Governor design. : RQ300/1150PA187-6 Governer no. : 0 421 801 155

Customer-spec. information

Customer : DAIMLER-BENZ

Engine : OM 421

1st version kW : 159.0 Rated speed : 2300 : 159.0 2nd version kW Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 0 681 343 009 assembly

Openina

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.00...4.10 Prestroke mm

(3.95...4.15)
Rack travel in mm: 9.00...12.00
Firing order: 6-3-5-2-4-1 Firing order

Phasing : 0-45-120-165-240-285

Tolerance $+ - \circ : 0.50 (0.75)$

BASIC SETTING

1st speed rpm: 1150

Rack travel in mm : 11.70...11.80

Del.quantity cm3/: 13.3...13.5

100 s: (13.0...13.7)

cm3 : 0.4Spread

100 s: (0.8)

2nd speed rpm : 300
Rack travel in mm : 7.80...8.00
Del.quantity cm3/: 1.2...1.8
100 s: (0.9...2.0)
Spread

cm3 : 0.4Spread 100 s: (0.8)

1st speed rpm : 1150

Rack travel in mm: 12.5...12.6 Del.quantity cm3/: 12.8...13.0*

100 s: (12.5...13.3

Spread cm3 : 0.4100 s: (0.8)

rpm : 300 2nd speed

Rack travel in mm : 8.30...8.50 Del.quantity cm3/: 1.2...1.8 *

100 s: (-) cm3 : 0.4 Spread

100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 650 Speed

Rack travel in mm : 13.20...14.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del.quantity : 133.0...135.0 1000 : (130.5...137.5)

: 4.00 Spread cm3

1000 : (8.00) 2nd version

rpm : 1150 Speed

Del. quantity cm3/: 128.0...130.0 1000 s: (125.0...133.0)

Spread cm3 : 4.0

1000 s: (8.0)

RATED SPEED

1st version

Setting point:

Speed : 650 rom Rack travel in mm: 13.6

Testing:

1st rack travel in: 10.70

rpm : 1195...1210 Speed

2nd rack travel in: 4.00

Speed rpm : 1240...1270 4th rack travel in: 1350

Speed rpm : 0.00...1.00

2nd version

Setting point:

speed rpm : 650 Rack travel in mm : 13.6

Testing:

1st rack travel in: 11.50 Speed rpm : 1195...1210 2nd rack travel in: 4.00

rpm : 1240...1270 Speed

4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300 Rack travel in mm : 7.90

Testina:

Speed rpm : 100 Minimum rack trave: 9.50

: 300 Speed rpm

Rack travel in mm : 7.80...8.00

Rack travel in mm: 2.00

: 410...440 Speed rom

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600 Del.quantity cm3/: 112.0...116.0

1000 s: (109.0...119.0)

Spread : 6.00 cm3

1000 s: (9.00)

2nd version

Speed man : 600

Del.quantity cm3/: 120.0...124.0 1000 s: (117.0...127.0)

cm3 : 6.00 Spread

1000 s: (9.00)

RACK STOP ADJUSTMENT

Speed : 600 nom

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.70

Speed rpm : 1195...1210

2nd version

1mm rack travel less than

full load rack tr: 11.50

Speed rpm : 1195...1210

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 130.0...150.0

1000 s: (126.0...154.0)

Remarks:

Version 1: Without return-flow

restriction

Version 2: With return-flow restriction

* Version 2

Note remarks

Test sheet : MB 11,0 c 3 : 07.04.89 Edition : 4.85 Replaces : ISO-4113 Test oil

Combination no. : 0 401 846 755

Injection pump

Pump designation : PE6P110A320LS3805

: 0 411 816 718 EP type number

Governor

Governor design. : RQ300/1150PA187-8 Governer no. : 0 421 801 180

Customer-spec, information

Customer : DAIMLER-BENZ

Engine : 0M421

1st version kW : 148.0 Rated speed : 2300 : 148.0 2nd version kW Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10

: (3.95...4.15)

Rack travel in mm : 9.00...12.00

Firing order : 6-3-5-2-4-1

: 0-45-120-165-240-285 Phasing

Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 1150

Rack travel in mm : 12.40...12.50

Del.quantity cm3/: 12.9...13.1

100 s: (12.6...13.3)

Spread cm3 : 0.4

100 s: (0.8)

rpm : 300.02nd speed

Rack travel in mm: 8.7...8.9 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.4)

cm3 : 0.4 100 s: (0.7) Spread

rpm : 1150 1st speed

Rack travel in mm : 12.6...12.7 Del.quantity cm3/ : 12.7...12.9* 100 s: (12.4...13.2

Spread cm3 : 0.4

100 s: (0.8)

rpm : 3002nd speed

Rack travel in mm : 8.50...8.70 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.4)

Spread

cm3 : 0.4 100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 650

Rack travel in mm : 13.20...14.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

F17

Del.quantity : 729.0....33.5) Del.quantity cm3/: 105.0...109.0 1000 s: (102.0...112.0) cm3 : 6.00Spread 1000 : (8.00) 1000 s: (9.00) 2nd version Speed rpm : 1150 Del.quantity cm3/: 127.0...129.0 2nd version Speed : 600 rpm Del.quantity cm3/: 117.0...121.0 1000 s: (114.0...124.0) 1000 s: (124.0...132.0) Spread cm3 : 4.001000 s: (8.00) cm3 : 6.00Spread 1000 s: (9.00) RATED SPEED 1st version RACK STOP ADJUSTMENT Setting point: Speed rom : 600 : 650 Speed Rack travel in mm: 13.6 **BREAKAWAY** Testina: 1st version 1st rack travel in: 11.40 1mm rack travel less than rpm : 1190...1200 Speed 2nd rack travel in: 4.00 full load rack tr: 11.40 Speed rpm : 1235...1265 4th rack travel in: 1350 Speed rpm : 1190...1200 Speed rpm : 0.00...1.502nd version 1mm rack travel less than 2nd version full load rack tr: 11.60 Speed rpm : 1195...1210 Setting point: : 650 Speed rpm STARTING FUEL DELIVERY Rack travel in mm: 13.6 Testina: Speed rpm : 100 Del.quantity cm3/: 130.0...150.0 1st rack travel in: 11.60 rpm : 1195...1210 1000 s: (126.0...154.0) 2nd rack travel in: 4.00 rpm : 1240...1270 Speed Remarks: 4th rack travel in: 1350 See VDT-I-401/102. Speed rpm : 0.00...1.50 Version 1: Without return-flow LOW IDLE 1 restriction Setting point w/out bumper spring Version 2: With return-flow restriction Speed rpm : 300 Rack travel in mm : 7.1 * Version 2 Testing: : 100 Speed rom Minimum rack trave: 8.50 rpm : 300 Rack travel in mm : 7.00...7.20 Rack travel in mm: 2.00 Speed rom : 400...440 FUEL DELIVERY CHARACTERISTICS 1st version : 600 Speed rpm

Note remarks

Test sheet : VOL 10,0 q Edition : 31.03.89 Replaces : 12.6.87 Test oil : ISO-4113

Combination no. : 0 401 846 759

Injection pump

Pump designation : PE6P110A320RS3108Y EP type number : 0 411 816 729

Governor

Governor design. : RQV250...1100PA649 Governer no. : 0 421 815 346

Customer-spec. information Customer : VOI VO

Engine : THD100EC

1st version kW : 180.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening |

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.00...3.10 Prestroke mm : (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 11.10...11.20

Del.quantity cm3/: 13.8...14.0

100 s: (13.5...14.3)

cm3 : 0.4Spread

100 s: (0.7)

2nd speed rpm : 250.0 Rack travel in mm : 5.2...5.4 Del.quantity cm3/: 3.0...3.4

100 s: (2.7...3.6) Spread cm3 : 0.3

100 s: (0.6)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

: 1.10...1.30 travel mm

rpm : 500 2nd speed

travel mm : 4.10...4.90

3rd speed rpm : 700

travel mm : 6.30...6.70

: 950 4th speed rpm

: 6.30...6.70 travel mm

5th speed rpm : 1100

travel mm : 7.00...7.50

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1175 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700 Aneroid pressure h: 900

Del.quantity : 730.0...143.0)

F19

Spread

cm3 : 4.00 1000 : (7.50)

RATED SPEED

1st version Control lever

position degrees: 61...69

Testing:

1st rack travel in: 10.10

Speed rpm: 1160...1170
2nd rack travel in: 4.00
Speed rpm: 1225...1255
4th rack travel in: 1350

Speed rom : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 8...16

Testing:

Speed rpm : 100 Minimum rack trave: 6.70

Speed rpm : 250 Rack travel in mm : 5.20...5.40

CONSTANT REGULATION

rpm : 250...425 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

rpm : 500 Speed

Pressure hPa : 900

: 11.10...11.20 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.60...9.80 2nd pressure hPa : 275

Rack travel in m: 9.90...10.00

3rd pressure hPa : 400

Rack travel in m: 10.70...10.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 700 Del.quantity cm3/ : 105.5...108.5

1000 s: (103.0...111.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.10

rpm : 1160...1170 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 170.0...200.0

1000 s: (166.0...204.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 5.20...5.40
Del.quantity cm3/ : 30.0...34.0
1000 s: (27.5...36.5)
Spread cm2 : 7.00

cm3 : 3.00Spread

1000 s: (6.00)

Remarks:

Delivery-valve spring pre-tension =

2.40...2.60 mm.

Permissible alteration from 2.20...2.90

Check electrically unlatched starting

fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,

the start position must be reached.

APPLICATION

Omnibus

Note remarks

Test sheet : VOL 10,0 q1 Edition : 07.03.88 Replaces : 12.6.87 Test oil : ISO-4113

Combination no. : 0 401 846 760

Injection pump

Pump designation : PE6P110A320RS3108X

: 0 411 816 730 EP type number

Governor

Governor design. : RQV250...1100PA649

: 0 421 813 346 Governer no.

Customer-spec. information Customer : VOLVO

Engine : THD100ED

: 203.0 1st version kW : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Open in a

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10 : (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 12.10...12.20

Del.quantity cm3/: 16.0...16.2

100 s: (15.7...16.5)

cm3 : 0.4Spread

100 s: (0.7)

2nd speed rpm : 250.0Rack travel in mm : 5.0...5.2 Del.quantity cm3/ : 3.0...3.4 100 s: (2.7...3.6)

Spread cm3 : 0.3

100 s: (0.6)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 250 : 1.10...1.30 1st speed

travel mm rpm : 500 2nd speed

travel mm : 4.10...4.90

rpm : 700 3rd speed

travel mm : 6.30...6.70 4th speed rpm : 950

travel mm : 6.30...6.70

5th speed rpm : 1100

travel mm : 7.00...7.50

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1175

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700 Aneroid pressure h: 900

Del.quantity : 100.0...165.0)

Spread

cm3 : 4.00 1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 61...69

Testina:

1st rack travel in: 11.10

rpm : 1160...1170 Speed

2nd rack travel in: 4.00

rpm : 1225...1255 Speed

4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 8...16

Testina:

Speed : 100 rpm

Minimum rack trave: 6.70

: 250 Speed rom

Rack travel in mm : 5.00...5.20

CONSTANT REGULATION

rpm : 250...425 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 rpm hPa : 900 Pressure

Rack travel mm : 12.10...12.20

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.30...9.40

2nd pressure hPa : 275

Rack travel in m: 9.60...9.70

3rd pressure hPa : 650

Rack travel in m: 11.70...11.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm : 700 Speed

Del.quantity cm3/: 105.5...108.5

1000 s: (103.0...111.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.10

Speed rpm : 1160...1170

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 170.0...200.0 1000 s: (166.0...204.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250 Rack travel in mm : 5.00...5.20 Del.quantity cm3/: 30.0...34.0

1000 s: (27.5...36.5)

cm3 : 3.00Spread

1000 s: (6.00)

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm.

Permissible alteration from 2.20...2.90

Check electrically unlatched starting

fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MB 11,0 o 1 : 07.04.89 Test sheet Edition : 4.85 Replaces Test oil : ISO-4113 Combination no. : 0 401 846 762 Injection pump Pump designation : PE6P110A320LS3805-10 EP type number : 0 411 816 740 Governor Governor design. : RQ300/1000PA187 Governer no. : 0 421 801 182 Customer-spec. information Customer : DAIMLER-BENZ Engine : 0M421 1st version kW : 140.0 Rated speed : 2000 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Overflow quantity min. 1/h: 100...120 Test nozzle holder : 0 681 343 009 assembly Opening | pressure, bar : 172...175 Test Lines : 1 680 750 015 Outside diameter x Wall thickness

: 6.00X1.50X600 x Lenath mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.00...4.10 : (3.95...4.15) Rack travel in mm : 9.00...12.00 Firing order : 6-3-5-2-4-1 Phasing : 0-45-120-165-240-285 Tolerance + - 0 : 0.50 (0.75) Time to cyl. no. : 6 BASIC SETTING 1st speed rpm: 1000 Rack travel in mm : 11.50...11.60 Del.quantity cm3/: 12.0...12.2 100 s: (11.7...12.5) Spread cm3 : 0.4100 s: (0.8) rpm : 300.02nd speed Rack travel in mm: 8.0...8.2 Del.quantity cm3/: 1.5...2.1 100 s: (1.2...2.3) cm3 : 0.4 100 s: (0.7) Spread GUIDE SLEEVE POSITION Control-lever position Degree: -1 Speed rpm : 650 Rack travel in mm : 13.00...14.00 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1000 : 120.5...122.5 Del.quantity 1000 : (117.5...125.5) Spread : 4.00 cm3 1000 : (8.00) RATED SPEED 1st version Setting point: rpm Rack travel in mm: 13.5 Testing: 1st rack travel in: 10.60

rpm : 1040...1050

Speed

Prestroke mm

2nd rack travel in: 4.00 Speed rpm : 1075...1105 LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 8.1 Testing: Speed rpm : 100
Minimum rack trave: 9.50
Speed rpm : 300
Rack travel in mm : 8.00...8.20
Rack travel in mm : 2.00 rpm : 430...470 Speed FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 600 Del.quantity cm3/ : 102.0...106.0 1000 s: (99.0...109.0) cm3 : 6.00 1000 s: (9.00) Spread **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.60 Speed rpm : 1040...1050 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 130.0...150.0 1000 s: (126.0...154.0) Remarks:

Note remarks

Test sheet : SCA 8,0 m 3 Edition : 09.03.87 : 4.85 Replaces

: ISO-4113 Test oil

: 0 401 846 775 Combination no.

Injection pump

Pumo designation : PE6P110A720RS3076 : G 411 816 720

EP type number Governor

Governor design. : RQ750PA528

: 0 421 801 126 Governer no.

Customer-spec. information Customer : SCANIA

Engine : DS8 42

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening 1

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 3.30...3.40 : (3.25...3.45)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 11.90...12.00

Del.quantity cm3/: 11.7...11.9

100 s: (11.5...12.1)

Spread cm3 : 0.5

100 s: (0.7)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

117.0...119.0 Del.quantity 1000 : (115.0...121.0)

cm3 : 5.00 1000 : (7.00) Spread

RATED SPEED

1st version

Testing:

1st rack travel in: 10.90 rpm : 750...755 Speed

2nd rack travel in: 4.00 Speed rpm : 773...783

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.90

rpm : 750...755 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 190.0...240.0

1000 s: (-)

Rack travel in mm : 20.00...21.00

HIGH IDLE

1st version

Rack travel in mm : 4.90...5.10

Remarks:

ADDITIONAL INFORMATION

Check and set without ROBO diaphragam

For comb. with letter index see VDT-I-400/116.

For sealing see VDT-I-400/117.

Scania test specifications taken over on Aug. 22, 1983

Engine start of delivery: 18° BTDC

Firing sequence of engine: 1-5-3-6-2-4.

APPLICATION

Generator

BOSCH INJ. PUMP TEST SPECIFICATIONS : 4.00...4.10 : (3.95...4.15) Prestroke mm Rack travel in mm : 9.00...12.00 Note remarks : 6-3-5-2-4-1 Firing order Test sheet : MB 11,0 r Edition : 07.04.89 Replaces : 31.7.87 Test oil : ISO-4113 Phasina : 0-45-120-165-240-285 Combination no. : 0 401 846 805 Tolerance + - 0 : 0.50 (0.75) Injection pump Time to cyl. no. : 6 Pump designation: PE6P110A320LS3814-10 EP type number : 0 411 816 741 BASIC SETTING Governor Governor design. : RQ300/1150PA187-6 1st speed rom: 1150 : 0 421 801 155 Governer no. Rack travel in mm : 12.40...12.50 Customer-spec. information Customer : DAIMLER-BENZ Del.quantity cm3/: 13.2...13.4 Engine : 0M421 100 s: (12.9...13.6) 1st version kW : 159.0 Spread cm3 : 0.4Rated speed : 2300 100 s: (0.8) TEST BENCH REQUIREMENTS 2nd speed rpm : 300.0Test oil Rack travel in mm: 8.3...8.5 inlet temp. °C : 38...42 Del.quantity cm3/: 1.2...1.8 100 s: (0.9...2.0) cm3 : 0.4 100 s: (0.7) Overflow valve Spread : 1 417 413 025 Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Control-lever position Overflow Degree: -1 quantity min. 1/h: 100...120 rpm : 650 Speed Rack travel in mm : 13.20...14.00 Test nozzle holder : 0 681 343 009 FULL LOAD DELIV. AT FULL LOAD STOP assembly Opening 1st version : 172...175 pressure, bar Speed rpm : 1150 Del.quantity : 132.0...134.0 1000 : (129.5...136.5) Test lines : 1 680 750 015 : 4.00 Spread cm3 : (8.00) 1000 Outside diameter x Wall thickness RATED SPEED x Length mm : 6.00x1.50x600 1st version (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. Setting point: : 650 rpm per values Rack travel in mm: 13.6

Testing:

Speed

1st rack travel in: 11.50

rpm : 1190...1200

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

2nd rack travel in: 4.00 rpm : 1235...1265 Speed 4th rack travel in: 1350 Speed rpm : 0.00...1.50LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 8.4 Testing: Speed rpm : 100 Minimum rack trave: 10.00 Speed : 300 rpm Rack travel in mm : 8.30...8.50 Rack travel in mm: 2.00 Speed rpm : 430...470 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 600 Del.quantity cm3/: 110.0...114.0 1000 s: (107.0...117.0) Spread cm3 : 6.001000 s: (9.00) RACK STOP ADJUSTMENT Speed rpm : 600 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.50 rpm : 1190...1200 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 130.0...150.0 1000 s: (126.0...154.0)

Remarks:

: KABBOHRER

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm Note remarks Rack travel in mm : 9.00...12.00 Firing order Test sheet : VOL 12.1 a Edition : 07.04.89 Replaces : 12.9.86 Test oil : ISO-4113 Phasing Combination no. : 0 401 846 813 Tolerance + - 0 Injection pump Time to cyl. no. : 1 Pump designation : PE6P120A320RS3165 EP type number : 0 411 826 747 BASIC SETTING Governor Governor design. : RQV300...1050PA657-2 rpm: 700 1st speed Governer no. : 0 421 813 419 Rack travel in mm : 12.30...12.40 Customer-spec. information Customer : VOLVO/B Del.quantity cm3/: 21.7...21.9 : TD121K Engine 100 s: (21.4...22.2) 1st version kW : 228.0 cm3 : 0.5Spread : 2100 Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 300.02nd speed Rack travel in mm : 4.5...4.7 Del.quantity cm3/: 1.7...2.1 100 s: (1.4...2.4) Test oil inlet temp. °C : 38...42 Overflow valve Spread cm3 : 0.4: 1 417 413 025 100 s: (0.7) Inlet press., bar: 1.50 (B) Setting of injection pump with governor Test nozzle holder assembly : 1 688 901 019 GUIDE SLEEVE TRAVEL 1st speed rpm : Opening travel mm pressure, bar : 207...210 2nd speed travel mm Orifice plate 3rd speed diameter mm : 0,8 travel mm 4th speed travel mm Test lines : 1 680 750 067 5th speed travel mm Outside diameter x Wall thickness

450 rpm : 3.60...4.00 rpm : 700 : 6.40...6.60 rpm : 950 : 6.40...6.60 rpm : 1110 : 7.80...8.00

300

1.60...1.80

: 2.60...2.70 : (2.55...2.75)

: 0.50 (0.75)

: 1-5-3-6-2-4

: 0-60-120-180-240-300

GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1150

Speed Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700 Aneroid pressure h: 1000

BEGINNING OF DELIVERY Test pressure, bar: 25...27

per values

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

: 6.00x1.50x1000

x Length mm

Del.quantity : 217.0...212.0) : 5.00 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 58...66 Testing: 1st rack travel in: 11.30 rpm : 1105...1115 Speed 2nd rack travel in: 4.00 Speed rpm : 1170...1200 4th rack travel in: 1300 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 7...15 Testing: Speed : 100 rpm Minimum rack trave: 6.10 rpm : 300 Rack travel in mm : 4.50...4.70 CONSTANT REGULATION rpm : 300...420 Speed Aneroid/Altitude Compensator Test 1st version Setting rpm : 500 Speed hPa : 1000 Pressure Rack travel mm : 12.30...12.40 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 8.50...8.70 2nd pressure hPa : 125 Rack travel in m: 8.90...9.00 3rd pressure hPa : 655 Rack travel in m: 11.90...12.10

FUEL DELIVERY CHARACTERISTICS

Speed rpm : 1000 Del.quantity cm3/ : 217.0...223.0

1000 s: (215.0...225.0)

Aneroid pressure h: 1000

Aneroid pressure h: -Speed rpm: 700 Del.quantity cm3/: 132.0...134.0 1000 s: (129.0...137.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.30 rpm : 1105...1115 Speed STARTING FUEL DELIVERY LOW IDLE Speed rpm : 300 Rack travel in mm : 4.50...4.70 Del.quantity cm3/: 17.0...21.0 1000 s: (14.5...24.5) Spread cm3: 4.00 1000 s: (7.00) Remarks: Delivery-valve spring pre-tension = 2.40...2.60 mm. Permissible alteration from 2.20...2.90

1st version

Note remarks

Test sheet : MB 11,0 s Edition : 07.04.89 : 12.9.86 Replaces Test oil : ISO-4113

Combination no. : 0 401 846 823

Injection pump

Pump designation : PE6P110A320LS3835 EP type number : 0 411 816 749

Governor

Governor design. : RQ300/900PA187-14 Governer no. : 0 421 801 357

Customer-spec. information

Customer : DAIMLER-BENZ

Engine : 0M441

1st version kW : 150.0 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 0 681 343 009 assembly

Opening |

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.00...4.10 Prestroke mm : (3.95...4.15)

Rack travel in mm : 9.00...12.00 Firing order : 6-3-5-2-4-1

Phasina : 0-45-120-165-240-285

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 900

Rack travel in mm : 12.50...12.60

Del.quantity cm3/ : 12.6...12.8

100 s: (12.3...13.0)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 300.0 Rack travel in mm : 8.0...8.2 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.4)

Spread cm3 : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 650 Rack travel in mm : 13.20...14.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 900 Speed

Del.quantity : 126.0...128.0 1000 : (123.5...130.5)

Spread cm3 : 4.00

1000 : (8.00)

RATED SPEED

1st version

Setting point: Speed rpm

: 650 Rack travel in mm: 13.6

Testing:

1st rack travel in: 11.50

rpm : 940...950 Speed

2nd rack travel in: 4.00 Speed rpm: 985...1015 4th rack travel in: 1100 Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

rpm : 300 Rack travel in mm: 8.1

Testing:

Speed rpm : 100 Minimum rack trave: 9.30 rpm : 300 Speed

Rack travel in mm: 8.00...8.20
Rack travel in mm: 2.00

rpm : 430...470 Speed

FUEL DELIVERY CHARACTERISTICS

1st version

: 600 Speed rpm

Del.quantity cm3/: 124.0...128.0 1000 s: (121.0...131.0)

Spread cm3 : 6.00

1000 s: (9.00)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.50 Speed rpm : 940...950

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 130.0...150.0

•

1000 s: (126.0...154.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks

Test sheet : VOL 12,2 a Edition : 31.03.89 Replaces : 7.1.88 : ISO-4113 Test oil

Combination no. : 0 401 846 827

Injection pump

Pump designation : PE6P12OA32ORS3178 EP type number : 0 411 826 752

Governor

Governor design. : RQV250...950PA657-11

: 0 421 813 568 Governer no.

Customer-spec. information Customer : VOLVO

Engine : TD122F

1st version kW : 257.0 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 3.60...3.70 : (3.55...3.75) Prestroke mm Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 13.00...13.10

Del.quantity cm3/: 22.9...23.1

100 s: (22.6...23.4)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 250.02nd speed Rack travel in mm: 4.6...4.8 Del.quantity cm3/: 1.7...2.2 100 s: (1.4...2.5)

Spread cm3 : 0.5100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250 : 1.00...1.40 travel mm 2nd speed rpm : 450

: 3.60...4.20 travel mm rpm : 700 3rd speed

: 6.40...6.60 travel mm 4th speed rpm : 985 travel mm : 8.20...8.40

5th speed rpm : 1060 travel mm : 9.60...10.00

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1000

Speed Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700 Aneroid pressure h: 900

Del.quantity : 229.0...234.0) : 5.00 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 60...68 Testing: 1st rack travel in: 12.00 rpm : 980...990 Speed 2nd rack travel in: 4.00 Speed rpm : 1060...1090 4th rack travel in: 1200 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 5...13 Testing: : 100 Speed rpm

Minimum rack trave: 6.20 rpm : 250 Rack travel in mm : 4.60...4.80

CONSTANT REGULATION

rpm : 250...380

Aneroid/Altitude Compensator Test

Speed

1st version Setting : 500 Speed rpm hPa : 900 Pressure

Rack travel mm : 13.00...13.10

 $1/\min : 500$ Speed 1st pressure hPa : -

Measurement

Rack travel in m: 9.80...10.00

2nd pressure hPa : 100

Rack travel in m: 10.20...10.30 3rd pressure hPa : 570 Rack travel in m: 12.70...12.90

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: -Speed rpm : 700 Del.quantity cm3/ : 163.0...165.0 1000 s: (160.0...168.0) **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 12.00 rpm : 980...990 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed Del.quantity cm3/: 220.0...260.0 1000 s: (216.0...264.0) Rack travel in mm: 20.00...21.00

LOW IDLE

Speed rpm : 250 Rack travel in mm : 4.60...4.80 Del.quantity cm3/: 17.5...22.5 1000 s: (14.5...25.5)

cm3 : 5.00 Spread 1000 s: (7.00)

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm. Permissible alteration from 2.20...2.90

BOSCH INJ. PUMP TEST SPECIFICATIONS : 3.80...3.90 : (3.75...3.95) Prestroke mm Note remarks Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order Test sheet : ENA 11,9 c Edition : 17.02.89 : 5.8.88 Replaces : ISO-4113 Test oil Phasing : 0-60-120-180-240-300 : 0 401 846 860 Combination no. Tolerance + - 0 : 0.50 (0.75) Injection pump Time to cyl. no. : 1 Pump designation : PE6P12OA32ORS32OO EP type number : 0 411 826 766 BASIC SETTING Governor Governor design. : RQV250...1000PA808-1 1st speed rpm: 600 : 0 421 813 660 Governer no. Rack travel in mm : 11.90...12.00 Customer-spec, information Customer : ENASA Del.quantity cm3/: 24.9...25.1 Engine : 96 R1 BX 100 s: (24.6...25.4) 1st version kW : 265.0 Spread cm3 : 0.5: 2000 Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 250.0 2nd speed Rack travel in mm : 3.3...3.7 Del.quantity cm3/ : 1.7...2.3 Test oil inlet temp. °C : 38...42 100 s: (1.4...2.6) Overflow valve cm3 : 0.8Spread : 1 417 413 025 100 s: (1.2) Inlet press., bar: 1.50 (B) Setting of injection pump with governor Test nozzle holder assembly : 1 688 901 019 GUIDE SLEEVE TRAVEL 1st speed rpm : 250 **Openina** travel mm : 1.00...1.40 pressure, bar : 207...210 350 2nd speed rom : 2.10...2.60 travel mm Orifice plate rpm : 700 3rd speed : 4.70...5.30 diameter mm : 0,8 travel mm rpm : 1055 4th speed : 7.90...8.10 travel mm Test lines : 1 680 750 067 5th speed : 1145 rpm travel mm : 9.00...9.40 Outside diameter x Wall thickness GUIDE SLEEVE POSITION x Length mm : 6.00X1.50X1000 Control-lever position Degree: -1 Speed rpm : 1100 Rack travel in mm : 15.20...17.80 (A) Injection pump setting values

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 Aneroid pressure h: 1200

Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Del.quantity : 249.0...254.0)

: 5.00 Spread cm3 1000 : (9.00)

RATED SPEED

1st version Control Lever

position degrees: 50...58

Testing:

1st rack travel in: 10.90

rpm : 1050...1060 Speed

2nd rack travel in: 4.00

Speed rpm : 1130...1160

4th rack travel in: 1250

Speed rom : 0.00...1.00

LOW IDLE 1 Control Lever

position degrees: 8...16

Testing:

Speed rpm : 100 Minimum rack trave: 5.00 rpm : 250 Speed

Rack travel in mm : 3.30...3.70

CONSTANT REGULATION

rpm : 250...330 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 500 Pressure hPa : 1200

: 11.90...12.00 Rack travel mm

Measurement

Speed 1/min: 500

1st pressure hPa : -

Rack travel in m: 8.50...8.90

2nd pressure hPa : 680

Rack travel in m: 11.30...11.40

3rd pressure hPa : 420

Rack travel in m: 9.50...9.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm : 900
Del.quantity cm3/: 244.0...250.0
1000 s: (241.0...253.0)

G08

Aneroid pressure h: -

Speed rpm: 500 Del.quantity cm3/: 149.0...152.0 1000 s: (146.5...154.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.90

Speed rpm : 1050...1060

STARTING FUEL DELIVERY

Remarks:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

APPLICATION

Special-purpose vehicle

Note remarks

Test sheet : ENA 11,9 e Edition : 17.02.89 Replaces : 11.7.88 Test oil : ISO-4113

Combination no. : 0 401 846 861

Injection pump

Pump designation : PE6P12OA32ORS3176-1 EP type number : 0 411 826 767

Governor

Governor design. : RQV250...1050PA808

: 0 421 813 553 Governer no.

Customer-spec. information Customer : ENASA

Engine : 96 R1 AX

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.80...3.90 : (3.75...3.95) Rack travel in mm : 9.00...12.00

G09

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 650

Rack travel in mm : 12.40...12.50

Del.guantity cm3/: 21.2...21.4

100 s: (20.9...21.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0Rack travel in mm: 4.2...4.4 Del.quantity cm3/: 2.5...3.1 100 s: (2.2...3.4)

cm3 : 0.8 Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

: 1.00...1.40 travel mm

2nd speed rpm : 350

: 2.10...2.60 travel mm

3rd speed rpm : 700

: 4.50...5.10 travel mm

rpm : 1095 4th speed

: 8.00...8.20 travel mm

5th speed rpm : 1200

travel mm : 9.20...9.60

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1180 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 650 Aneroid pressure h: 900

Del.quantity : 212.0...217.0)

Spread cm3 : 5.00 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 50...58

Testina:

1st rack travel in: 11.40 Speed rpm : 1090...1100 2nd rack travel in: 4.00 rpm : 1185...1215 Speed

4th rack travel in: 1300

Speed rom : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 11...19

Testing:

Speed rpm : 100 Minimum rack trave: 5.90 rpm : 250 Rack travel in mm: 4.20...4.40

CONSTANT REGULATION

rpm : 250...350 Speed

Ameroid/Altitude Compensator Test

1st version Setting

Speed rpm : 500 Pressure hPa : 900

Rack travel mm : 12.40...12.50

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.90...10.30
2nd pressure hPa : 390
Rack travel in m: 11.90...12.00
3rd pressure hPa : 160
Rack travel in m: 10.50...10.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm : 1030 Del.quantity cm3/ : 215.0...221.0 1000 s: (212.0...224.0)

Aneroid pressure h: -Speed rpm : 500

G10

Del.quantity cm3/: 151.0...153.0 1000 s: (148.0...156.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.40

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 155.0...175.0 1000 s: (151.0...179.0) Rack travel in mm: 19.50...21.00

Remarks:

Delivery—valve spring pre-tension 3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

APPLICATION

Special-purpose vehicle

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : UNI 13,8 c1 : 29.03.89 Test sheet Edition Replaces : 16.6.88 Test oil : ISO-4113 Combination no. : 0 401 846 879 Injection pump Pump designation : PE6P120A720RS3192 EP type number : 0 411 826 761 Governor Governor design. : RQV300...900PA857-1 Governer no. : 0 421 813 683 Customer-spec. information Customer : IVECO-UNIC Engine : 8210.42.101 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 019 assembly Openina : 207...210 pressure, bar Orifice plate diameter mm : 0,8 Test Lines : 1 680 750 067 Outside diameter x Wall thickness x Lenath mm : 6.00x1.50x1000 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

Firing order : 1-5-3-6-2-4 Phasing : 0-60-120-180-240-300 Tolerance + - 0 : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 900 Rack travel in mm: 13.10...13.20 Del.quantity cm3/: 23.6...23.8 100 s: (23.3...24.1) Spread cm3 : 0.5100 s: (0.9) 2nd speed rpm : 300.0 Rack travel in mm : 4.9...5.1 Del.quantity cm3/: 1.8...2.4 100 s: (1.5...2.7) Spread cm3 : 0.8100 s: (1.2) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 300 1st speed : 0.70...0.90 travel mm 2nd speed rpm : 550 : 4.00...4.60 travel mm 3rd speed rpm : 800 : 6.60...6.90 travel mm 4th speed rpm : 900 : 7.70...7.90 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 950 Speed Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 900 Aneroid pressure h: 900 Aneroid F. Del.quantity 1000 : 236.0...238.0 : (233.0...241.0) : 5.00 Spread cm3

: (9.00)

1000

BEGINNING OF DELIVERY

Prestroke mm

Test pressure, bar: 25...27

: (3.35...3.55) Rack travel in mm : 9.00...12.00

: 3.40...3.50

RATED SPEED

1st version Control Lever

position degrees: 57...65

Testing:

1st rack travel in: 12.10 rpm : 940...950 Speed

2nd rack travel in: 4.00

rom : 1060...1090 Speed

4th rack travel in: 1200

Speed rom : 0.00...1.00

LOW IDLE 1 Control Lever

position degrees: 4...12

Testing:

Speed rom : 100 Minimum rack trave: 6.50 : 300 rpm

Rack travel in mm : 4.90...5.10

CONSTANT REGULATION

rpm : 370...490 Speed

Aneroid/Altitude Compensator Test

1st version

Setting Speed

: 500 rpm Pressure hPa : 900

: 13.20...13.30 Rack travel mm

Measurement

Speed 1/min: 500

1st pressure hPa : -

Rack travel in m: 9.10...9.30

2nd pressure hPa : 520 Rack travel in m: 12.20...12.30 3rd pressure hPa : 330 Rack travel in m: 9.80...10.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm: 500 Del.quantity cm3/: 230.0...236.0 1000 s: (227.0...239.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 111.0...113.0

1000 s: (108.0...116.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.10

Speed rpm : 940...950

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 235.0...265.0 1000 s: (231.0...269.0)

LOW IDLE

Speed : 300 rpm

Rack travel in mm : 4.90...5.10 Del.quantity cm3/: 18.0...24.0 1000 s: (15.0...27.0)

cm3 : 8.00 1000 s: (12.00) Spread

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

Note remarks

Test sheet : MB 11,0 s 9 Edition : 07.04.89 Replaces : 24.6.88 Test oil : ISO-4113

Combination no. : 0 401 846 880

Injection pump

Pump designation : PE6P110A320LS3835-1 : 0 411 816 755

EP type number

Governor

Governor design. : RQ300/1050PA187-19 : 0 421 801 428 Governer no.

Customer-spec. information

Customer : DAIMLER-BENZ

Engine : 0M441

1st version kW : 160.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm

: 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27 Prestroke mm : 4.00...4.10 : (3.95...4.15)

Rack travel in mm : 9.00...12.00 : 6-3-5-2-4-1 Firing order

Phasina : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 750

Rack travel in mm : 13.00...13.10

Del.quantity cm3/: 12.6...12.8

100 s: (12.2...13.0)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 300.0 Rack travel in mm : 8.3...8.6 Del.quantity cm3/ : 1.5...2.1

100 s: (1.2...2.3)

cm3 : 0.4Spread

100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 650 Rack travel in mm : 13.80...14.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Del.quantity : 720.0...120.5)

: 4.00 Spread cm3

1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed rpm Rack travel in mm: 14.1

Testing:

1st rack travel in: 12.00 Speed rpm : 1090...1100

2nd rack travel in: 4.00 Speed rpm : 1150...1180 4th rack travel in: 1300 rpm : 0.00...2.00 Speed LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 7.0 Testing: Speed rpm : 200 Minimum rack trave: 8.70 Speed rpm : 300
Rack travel in mm : 6.80...7.20
Rack travel in mm : 2.00 Speed rpm : 400...440 TORQUE CONTROL Torque control curve - 1st version rpm : 1050 1st speed 2nd speed : 600 rpm 3rd speed : 900 rpm FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 1050 Del.quantity cm3/: 138.0...142.0 1000 s: (135.0...145.0) cm3 : 7.00 Spread 1000 s: (10.) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.00 Speed rpm : 1090...1100 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity_cm3/ : 130.0...150.0 1000 s: (126.0...154.0) Remarks: **APPLICATION** Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : SSC 10,5 e Edition : 07.02.89 Replaces : 5.8.88 Test oil : ISO-4113

Combination no. : 0 401 846 884

Injection pump

Pump designation : PE6P130A320LS3210 EP type number : 0 411 836 713

Governor

Governor design. : RQV400...750PA607 : 0 421 813 313 Governer no.

Customer-spec. information Customer : SSCM

Engine : UD 25.L6

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90 : (2.75...2.95) Rack travel in mm : 9.00...12.00

G15

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm: 14.50...14.60

Del.quantity cm3/: 38.8...39.1

100 s: (38.4...39.4)

Spread cm3 : 0.6

100 s: (1.0)

rom : 400.02nd speed Rack travel in mm : 5.4...5.6 Del.quantity cm3/ : 2.7...3.3 100 s: (2.3...3.7)

cm3 : 1.0 Spread 100 s: (1.4)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 400

: 0.20...0.50 travel mm

rpm : 500 2nd speed

travel mm : 1.90...2.10

3rd speed rpm : 650

travel mm : 1.90...2.10

: 750 4th speed rpm

: 4.50...5.50 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

: 388.0...391.0 Del.quantity 1000 : (384.5...394.5)

Spread : 6.00 cm3

1000 : (10,00)

RATED SPEED

1st version

Testing:

1st rack travel in: 13.50 rpm : 750...755 Speed

2nd rack travel in: 4.00 Speed rpm : 776...789 4th rack travel in: 950 Speed rpm : 0.00...1.00LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 400 Rack travel in mm : 5.5 Testing: Speed rpm : 100 Minimum rack trave: 7.00 Speed rpm : 400 Rack travel in mm : 5.40...5.60 Rack travel in mm : 2.00 rpm : 650...750 Speed **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 13.50 rpm : 750...755 Speed LOW IDLE

Speed rpm : 400 Rack travel in mm: 5.40...5.60

Del.quantity cm3/: 27.0...33.0

1000 s: (23.0...37.0)

Spread cm3 : 10.00

1000 s: (14.00)

Remarks:

APPLICATION

Generator set

Note remarks

Test sheet : MB 11,0 s11 Edition : 07.02.89 Replaces : 9.1.89 Test oil : ISO-4113

Combination no. : 0 401 846 889

Injection pump

Pump designation : PE6P110A320LS3835-1

EP type number : 0 411 816 755

Governor

Governor design. : RQV300...900PA524-10

: 0 421 813 549 Governer no.

Customer-spec. information

Customer : DAIMLER-BENZ

Engine : OM 441

1st version kW : 150.0 : 1800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10 : (3.95...4.15)

Rack travel in mm : 9.00...12.00 Firina order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

rpm: 900 1st speed

Rack travel in mm : 12.90...13.00

Del.quantity cm3/: 12.6...12.8

100 s: (12.3...13.0)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 300.0 Rack travel in mm : 8.7...8.9 Del.quantity cm3/ : 1.6...2.2 100 s: (1.3...2.4)

Spread cm3 : 0.4100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 : 1.20...1.40 1st speed travel mm

2nd speed rpm : 500 : 3.50...3.80 travel mm

3rd speed rpm : 950

: 8.30...8.70 travel mm rom : 1000

4th speed : 9.40...10.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 950 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 900 Speed

: 126.0...128.0 Del.quantity

1000 : (123.5...130.5)

cm3 : 4.00 1000 : (8.00) Spread RATED SPEED 1st version Control lever position degrees: 51...59 Testina: 1st rack travel in: 11.90 Speed rpm: 955...965 2nd rack travel in: 4.00 Speed rpm : 1000...1030 4th rack travel in: 1100 rom : 0.00...1.00Speed LOW IDLE 1 Control Lever position degrees: 17...25 Testina: rpm : 200 Speed Minimum rack trave: 9.50 Speed rpm : 300 Rack travel in mm : 8.00...8.20 CONSTANT REGULATION rpm : 300...450 Speed START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 600 Del.quantity cm3/ : 122.0...126.0 1000 s: (119.0...129.0) cm3 : 6.00 Spread 1000 s: (8.) **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 11.90 Speed rpm : 955...965 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed Del.quantity cm3/: 130.0...150.0 1000 s: (126.0...154.0)

G18

Remarks:

Note remarks

Test sheet : BAO 7,1 a Edition : 29.03.89

Replaces

Test oil : ISO-4113

Combination no. : 0 401 846 892

Injection pump

Pump designation : PE6P110A320RS3219 EP type number : 0 411 816 759

Governor

Governor design. : RQV325...1500PA901

: 0 421 813 719 Governer no.

Customer-spec. information Customer : BAUDOUIN

Engine : 6F12 SR-SRY

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 40...45

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70

: (3.55...3.75)

Rack travel in mm : 9.00...12.00

G19

Firing order : 1- 4- 3- 6- 5- 2

: 0-75-120-195-240-315 Phasing

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 14.30...14.40

Del.quantity cm3/: 21.7...22.0

100 s: (21.4...22.2)

cm3 : 0.4Spread

100 s: (0.7)

rpm : 325.02nd speed Rack travel in mm: 5.1...5.3 Del.quantity cm3/: 2.2...2.7

100 s: (1.9...2.9)

cm3 : 0.4Spread 100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rom : 325 1st speed

: 1.00...1.40 travel mm

rpm : 1100 2nd speed

: 4.60...5.00 travel mm 3rd speed rpm : 1500

: 7.60...7.80 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1650 Speed

Rack travel in mm : 7.50...10.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

Aneroid pressure h: 900

: 217.0...220.0 : (214.5...222.5) Del.quantity 1000

: 4.00 Spread cm3

1000 : (7.50)

RATED SPEED

1st version Control lever

position degrees: 49...57

Testing:

1st rack travel in: 13.30

rpm : 1540...1550 Speed

2nd rack travel in: 4.00

Speed rpm : 1680...1710 4th rack travel in: 1800 Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 12...20

Testing:

Speed rpm Minimum rack trave: 6.70 Speed rpm

Rack travel in mm : 5.10...5.30

CONSTANT REGULATION

rpm : 370...480 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

rpm : 500 hPa : 900 Speed rpm Pressure

Rack travel mm : 14.30...14.40

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 13.30...13.40 2nd pressure hPa : 300

Rack travel in m: 13.60...13.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 : 1500 Speed

rpm

Del.quantity cm3/: 201.0...208.0 1000 s: (198.5...210.5)

Spread cm3 : 8.00

1000 s: (11.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 190.0...194.0

1000 s: (187.5...196.5)

BREAKAWAY

G20

1st version

1mm rack travel less than

full load rack tr: 13.30

rpm : 1540...1550 Speed

INTERMEDIATE RATED SPEED

Rack travel in mm: 4.00

STARTING FUEL DELIVERY

Speed rpm : 100

LOW IDLE

Speed rpm : 325
Rack travel in mm : 5.10...5.30
Del.quantity cm3/ : 22.0...27.0
1000 s: (19.5...29.5)

Spread cm3 : 4.50

1000 s: (7.50)

Remarks:

APPLICATION

Special-purpose vehicle

Note remarks

Test sheet : MB 11,0 L 4 Edition : 07.02.89 Replaces : 2.12.88 Test oil : ISO-4113

Combination no. : 0 401 846 897

Injection pump

Pump designation : PE6P12OA32OLS3815-13

: 0 411 826 782 EP type number

Governor

Governor design. : RQ300/1050PA840-1 : 0 421 801 418 Governer no.

Customer-spec. information

Customer : DAIMLER-BENZ

Engine : OM 441 A

1st version kW : 191.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm 8.0:

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70 : (3.55...3.75)
Rack travel in mm : 9.00...12.00

Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 12.30...12.50

Del.quantity cm3/: 19.0...19.2

100 s: (18.7...19.5)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.02nd speed Rack travel in mm: 5.1...5.4 Del.quantity cm3/: 1.4...2.2

100 s: (1.1...2.5)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2 rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 600 Speed Aneroid pressure h: 700

Del.quantity : 190.0....195.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600 Rack travel in mm : 20.0 Speed : 600

Testina: 1st rack travel in: 10.70 rpm : 1095...1110 Speed 2nd rack travel in: 4.00 Speed rpm : 1165...1195 4th rack travel in: 1250 rpm : 0.00...1.50 Speed LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 5.2 Testing: Speed rpm : 100 Minimum rack trave: 6.60 rpm : 300 Speed Rack travel in mm : 5.10...5.40 Rack travel in mm : 2.00 : 365...405 Speed COM TORQUE CONTROL Dimension a mm : 0.90 2nd speed rpm: 1050 Rack travel in m: 11.70...11.90 3rd speed rpm : 700 Rack travel in m: 12.70...12.90 Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 rom hPa : 700 Pressure Rack travel mm : 12.30...12.50 Measurement 1/min: 600 Speed 1st pressure hPa : 350 Rack travel in m: 10.30...10.50 2nd pressure hPa : 550 Rack travel in m: 11.90...12.10 3rd pressure hPa : 780 Rack travel in m: 12.40...12.50 * 4th pressure hPa : 1100 Rack travel in m: 12.65...12.75 5th pressure hPa : -Rack travel in m: 9.60...9.90 START CUT-OUT Speed 1/min : 220 (240)

1st version Aneroid pressure h: 1100 Speed rpm : 1050
Del.quantity cm3/ : 184.0...187.0
1000 s: (181.0...190.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: 1100 Speed rpm : 700 Del.quantity cm3/: 204.0...208.0 1000 s: (201.0...211.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 129.0...131.0 1000 s: (126.0...134.0) Spread cm3 : 8.00 1000 s: (-) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.70 Speed rpm : 1095...1110 Speed STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 190.0...210.0 1000 s: (186.0...214.0)

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

APPLICATION

Omnibus

FUEL DELIVERY CHARACTERISTICS

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MAN 14,5 a Edition : 29.03.89 : 11.12.87 Replaces Test oil : ISO-4113 Combination no. : 0 401 848 082 Injection pump Pump designation : PE8P110A520/5LS851 EP type number : 0 411 818 046 Governor Governor design. : RQ250/1150PA688 : 0 421 801 231 Governer no. Customer-spec. information Customer : MAN Engine : D2848T : 245.0 1st version kW : 2300 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder assembly : 0 681 343 009 **Opening** pressure, bar : 172...175 Test Lines : 1 680 750 015 Outside diameter x Wall thickness x Length mm : 6.00X1.50X600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY

Firing order : 8-7-2-6-3-5-Phasing : 0-45-90-135-180-225-270-315 Tolerance + - 0 : 0.50 (0.75) Time to cyl. no. : 8 BASIC SETTING 1st speed rpm: 1150 Rack travel in mm : 10.80...10.90 Del.quantity cm3/: 14.3...14.5 100 s: (14.0...14.7) Spread cm3 : 0.4100 s: (0.7) 2nd speed rpm : 250.0 Rack travel in mm : 4.9...5.1 Del.quantity cm3/ : 1.8...2.4 100 s: (1.5...2.6) Spread cm3 : 0.4100 s: (0.7) GUIDE SLEEVE POSITION Control-lever position Degree: -2 rpm : 600 Speed Rack travel in mm: 19.20...20.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1150 Aneroid pressure h: 1000 Del.quantity : 143.0...147.5) : 4.00 cm3 1000 : (7.50) RATED SPEED 1st version Setting point: Speed rpm Rack travel in mm : 20.0 Testing:

1st rack travel in: 9.80

2nd rack travel in: 4.00

Speed

rpm : 1195...1210

Prestroke mm

Test pressure, bar: 25...27

Rack travel in mm : 9.00...12.00

: 3.00...3.10

: (2.95...3.15)

rpm : 1280...1310 Speed 4th rack travel in: 1450 Speed rom : 0.00...1.00LOW IDLE 1

Setting point w/out bumper spring rpm : 250 Speed

Rack travel in mm: 5.0

Testing: Speed rpm : 100 Minimum rack trave: 6.50 Speed rpm : 250

Rack travel in mm : 4.90...5.10

Rack travel in mm: 2.00

Speed COM : 310...350

TORQUE CONTROL Dimension a mm Torque control curve - 1st version 1st speed rpm : 1150
Rack travel in m: 10.80...10.90
2nd speed rpm : 700

Rack travel in m: 10.80...11.00

Aneroid/Altitude Compensator Test

1st version Setting

rpm : 500 hPa : 1000 Speed Pressure

Rack travel mm : 10.80...10.90

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.60...9.80

2nd pressure hPa : 290
Rack travel in m: 10.50...10.60
3rd pressure hPa : 230
Rack travel in m: 10.00...10.20

START CUT-OUT

1/min: 170 (190) Speed

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 1000 Speed rpm : 700 Del.quantity cm3/: 135.0...141.0 1000 s: (132.0...144.0)

Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 108.0...110.0 1000 s: (105.5...112.5)

Spread cm3 : 1000 s: (7.50)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.80

rpm : 1195...1210 Speed

INTERMEDIATE RATED SPEED Rack travel in mm: 4.00

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 190.0...210.0

1000 s: (186.0...214.0)

LOW IDLE

Speed rpm : 250

Rack travel in mm : 4.90...5.10 Del.quantity cm3/: 18.0...24.0 1000 s: (15.5...26.5)

cm3 : 4.50 Spread

1000 s: (7.50)

Remarks:

: MAN-NR, 2-7353

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : FIA 17,2 b4 Test sheet Edition : 10.02.89 Replaces Test oil : ISO-4113 Combination no. : 0 401 848 715 Injection pump Pump designation: PE8P12DA920/5LS3804 EP type number : 0 411 828 705 Governor Governor design: RQ300/1200PA356 Governer no. : 0 421 801 070 Customer-spec. information Customer : IVECO-FIAT : 8280.02.000 Engine 1st version kW : 257.4 Rated speed : 2400 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder assembly : 0 681 443 022 Openina pressure, bar : 172...175 Test lines : 1 680 750 060 Outside diameter x Wall thickness : 8.00x2.00x1000 x Lenath mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

Phasing : 0-45-90-135-180-225-270-315 : 0.50 (0.75) Tolerance + - 0 Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 1200 Rack travel in mm : 9.30...9.40 Del.quantity cm3/: 17.3...17.7 100 s: (17.0...18.0) Spread cm3 : 0.5100 s: (0.9) rpm : 300.02nd speed Rack travel in mm : 5.9...6.1 Del.quantity cm3/ : 2.8...3.6 100 s: (2.5...3.9) cm3 : 0.8Spread 100 s: (1.2) GUIDE SLEEVE POSITION Control-lever position Degree: -1 Speed rpm : 650 Rack travel in mm : 15.20...16.40 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1200 Del.quantity : 173.0...177.0 1000 : (170.0...180.0) : 5.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version Setting point: : 650 Speed rpm : 650 Rack travel in mm : 15.8 Testing: 1st rack travel in: 8.30 Speed rpm : 1245...1260 2nd rack travel in: 4.00 rpm : 1280...1310 Speed

Firing order

: 1- 8- 4- 3- 6- 5-7- 2

G25

BEGINNING OF DELIVERY

Prestroke mm

Test pressure, bar: 25...27

Rack travel in mm : 9.00...12.00

: 3.50...3.60

: (3.45...3.65)

4th rack travel in: 1400

Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 6.0

Testing:

Speed rpm : 100 Minimum rack trave: 7.50 Speed rpm : 300
Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00
Speed

: 405...445 Speed rpm

TORQUE CONTROL

Dimension a mm : -

Torque control curve - 1st version 1st speed rpm : 1200 Rack travel in m: 9.30...9.40

2nd speed rpm : 650

Rack travel in m: 9.30...9.50

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8.30

Speed rpm : 1245...1260

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

Note remarks

Test sheet : FIA 17,2 b3 Edition : 10.02.89 : 5.85 Replaces Test oil : ISO-4113

Combination no. : 0 401 848 718

Injection pump

Pump designation : PE8P120A920/5LS3804

EP type number : 0 411 828 705

Governor

Governor design. : RQV300...1200PA357

Governer no. : 0 421 813 188

Customer-spec, information Customer : IVECO-FIAT

: 8280.02.020 Engine

1st version kW : 257.4 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 443 022 assembly

Opening

: 172...175 pressure, bar

Test Lines : 1 680 750 060

Outside diameter x Wall thickness

: 8.00x2.00x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.50...3.60 : (3.45...3.65) Prestroke mm

Rack travel in mm : 9.00...12.00

: 1-8-4-3-6-5-Firing order

Phasing : 0-45-90-135-180-225-

270-315 Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1200

Rack travel in mm : 9.30...9.40

Del.quantity cm3/: 17.3...17.7

100 s: (17.0...18.0)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.02nd speed Rack travel in mm: 5.9...6.1 Del.quantity cm3/: 2.8...3.6 100 s: (2.5...3.9)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

: 1.10...1.50 travel mm

2nd speed rpm : 450

travel mm : 2.60...3.30

rpm : 900 3rd speed

: 5.60...6.00 travel mm

: 1200 4th speed rpm

: 7.90...8.10 : 1500 travel mm

5th speed rpm

travel mm : 11.00...12.00

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1230 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1200 Speed

: 173.0...177.0 Del.quantity

1000 : (170.0...180.0)

cm3 : 5.00 1000 : (9.00) Spread cm3

RATED SPEED

1st version Control lever

position degrees: 54...62

Testing:

1st rack travel in: 8.30 Speed rpm : 1240...1250 2nd rack travel in: 4.00

Speed rpm : 1315...1345 4th rack travel in: 1450

Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever

position degrees: 8...16

Testing:

Speed rpm : 100 Minimum rack trave: 7.50

Speed rpm : 300 Rack travel in mm : 5.90...6.10

CONSTANT REGULATION

rpm : 340...445 Speed

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8.30

Speed rpm : 1240...1250

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

Note remarks

Test sheet : FIA 17,2 b4 : 10.02.89 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 401 848 719

Injection pump

Pump designation: PE8P120A920/5LS3804

EP type number : 0 411 828 705

Governor

Governor design: RQ300/1200PA356 : 0 421 801 070 Governer no.

Customer-spec. information Customer : IVECO-FIAT

: 8280.02.405 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 443 022 assembly

Opening

: 172...175 pressure, bar

Test Lines : 1 680 750 060

Outside diameter x Wall thickness

x Length mm : 8.00X2.00X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.50...3.60 Prestroke mm

: (3.45...3.65) Rack travel in mm : 9.00...12.00

1- 8- 4- 3- 6- 5-7- 2 Firing order

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1200

Rack travel in mm : 9.30...9.40

Del.quantity cm3/: 17.3...17.7

100 s: (17.0...18.0)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300.02nd speed Rack travel in mm: 5.9...6.1 Del.quantity cm3/: 2.8...3.6

100 s: (2.5...3.9)

Spread cm3 : 0.8100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 650 Speed

Rack travel in mm : 15.20...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

173.0...177.0 1900 : (170.0...180.0) cm3 : 5.00 Del.quantity

Spread

: (9.00) 1000

RATED SPEED

1st version

Setting point:

Speed Rack travel in mm: 15.8

Testing:

1st rack travel in: 8.30

rpm : 1245...1260 Speed

2nd rack travel in: 4.00

rpm : 1280...1310 Speed

4th rack travel in: 1400

: 0.00...1.00 Speed rpm

H01

LOW IDLE 1

Setting point w/out bumper spring

: 300 rpm Rack travel in mm: 6.0

Speed rpm: 100
Minimum rack trave: 7.50
Speed rpm: 300
Rack travel in mm: 5.90...6.10
Rack travel in mm: 2.00
Speed rpm: 400

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1200

Rack travel in m: 9.30...9.40

2nd speed rpm : 650

Rack travel in m: 9.30...9.50

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8.30

Speed rom : 1245...1260

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

APPLICATION

Omnibus

Note remarks

Test sheet : FIA 17,2 b6 Edition : 10.02.89

Replaces Test oil

: ISO-4113

Combination no.

: 0 401 848 731

Injection pump

Pump designation : PE8P12DA920/5LS3804 : 0 411 828 705

EP type number

Governor

Governor design. : RQV300...1200PA506

Governer no.

: 0 421 813 249

Customer-spec. information

Customer

: IVECO-FIAT

1st version kW

: 331.0 : 2400

Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 443 022

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 060

Outside diameter x Wall thickness

x Length mm : 8.00x2.00x1000

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60

: (3.45...3.65)

Rack travel in mm : 9.00...12.00

1-8-4-3-6-5-7-2 Firing order

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1200

Rack travel in mm : 11.60...11.70

Del.quantity cm3/: 24.3...24.7

100 s: (24.0...25.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0Rack travel in mm: 4.9...5.1 Del.quantity cm3/: 1.9...2.5

100 s: (1.6...2.8)

Spread cm3 : 0.8100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

: 1.30...1.70 travel mm

2nd speed rpm : 450

: 2.80...3.40 travel mm

3rd speed rpm : 900

: 5.50...5.90 rpm : 1200 : 7.70...7.90 travel mm

4th speed

travel mm rpm : 1500

5th speed

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 1250 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rom : 1200

Aneroid pressure h: 700

Del.quantity : 243.0...247.0

1000 : (240.0...250.0)

: 5.00 Spread cm3

: (9.00) 1000

RATED SPEED

1st version Control Lever

position degrees: 55...63

Testing:

1st rack travel in: 10.60

Speed rpm: 1240...1250 2nd rack travel in: 4.00

Speed rpm : 1360...1390 4th rack travel in: 1500

Speed rom : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 6...14

Testing:

Speed rom : 100 Minimum rack trave: 6.50 Speed rpm : 300

Rack travel in mm : 4.90...5.10

CONSTANT REGULATION

rpm : 310...405 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 500 Pressure hPa : 700

Rack travel mm : 11.60...11.70

Measurement

Speed 1/min: 500

1st pressure hPa : -

Rack travel in m: 8.50...8.60

2nd pressure hPa : 435

Rack travel in m: 10.80...10.90

3rd pressure hPa : 350 Rack travel in m: 9.20...9.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 1200 Del.quantity cm3/ : 160.0...164.0 1000 s: (157.0...167.0)

BREAKAWAY

H04

1st version 1mm rack travel less than

full load rack tr: 10.60

beed rpm : 1240...1250

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

Note remarks

: FIA 17,2 c1 Test sheet Edition : 10.02.89

Replaces

Test oil : ISO-4113

Combination no. : 0 401 848 736

Injection pump

Pump designation : PE8P120A920/5LS3812 : 0 411 828 709

EP type number

Governor

Governor design. : RQV300...1200PA357

: 0 421 813 188 Governer no.

Customer-spec. information

Customer : IVECO-FIAT

: 8281.02.001 Engine

1st version kW : 257.4 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 443 022

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 060

Outside diameter

x Wall thickness

x Length mm : 8.00x2.00x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

: 3.50...3.60 Prestroke mm

: (3.45...3.65)

Rack travel in mm : 9.00...12.00 : 1-8-4-3-6-5-Firing order

H05

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASTC SETTING

1st speed rpm: 1200

Rack travel in mm : 9.30...9.40

Del.quantity cm3/: 17.3...17.7

100 s: (17.0...18.0)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 300.0Rack travel in mm : 5.9...6.1 Del.quantity cm3/: 2.8...3.6 100 s: (2.5...3.9)

cm3 : 0.6Spread 100 s: (0.9)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

: 1.30...1.70 travel mm rpm : 450 2nd speed

: 2.70...3.40 travel mm

rpm : 900 3rd speed

: 5.70...6.10 travel mm rom : 1200 4th speed

: 8.20...8.40 travel mm

5th speed rpm : 1500 : 11.00...12.00 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1200 Speed

Rack travel in mm: 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

: 173.0...177.0 Del.quantity

1000 : (170.0...180.0)

Spread : 5.00 cm3

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 55...63

Setting point:

Speed rpm : 1200 Rack travel in mm : 16.5

Testing:

1st rack travel in: 8.30

Speed rpm: 1240...1250 2nd rack travel in: 4.00

Speed rpm : 1305...1335 4th rack travel in: 1450

rom : 0.00...1.00 Speed

LOW IDLE 1

Control lever

position degrees: 8...16

Setting point w/out bumper spring Speed rpm : 300

Rack travel in mm: 6.0

Testing:

Speed rpm : 100

Minimum rack trave: 7.50

rpm : 300 Speed

Rack travel in mm : 5.90...6.10

CONSTANT REGULATION

Speed rpm : 330...430

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8.30

rpm : 1240...1250 Speed

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

Note remarks

Test sheet : MB 14,6 k 8 Edition : 03.03.89 Replaces : 2.12.88 Test oil : ISO-4113

: 0 401 848 762 Combination no.

Injection pump

Pump designation: PE8P120A320LS3807-10

EP type number : 0 411 828 713

Governor

Governor design. : RQV300...1150PA545-7

: 0 421 813 595 Governer no.

Customer-spec. information

Customer : DAIMLER-BENZ

Engine : OM 422 A

1st version kW : 243.0 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm 8.0:

Test Lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10

: (3.95...4.15)

Rack travel in mm : 9.00...12.00 Firing order : 8-7-2-6-3-5-

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 1150

Rack travel in mm : 10.70...10.80

Del.guantity cm3/: 15.9...16.1

100 s: (15.6...16.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.0...5.2 Del.quantity cm3/ : 1.2...1.8 100 s: (0.9...2.1)

cm3 : 0.8Spread

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed

rpm : 300 : 1.40...1.60 travel mm 2nd speed rpm : 800

: 6.00...6.20 travel mm

3rd speed rpm : 1200 : 8.00...8.50 travel mm

4th speed rpm : 1300

travel mm : 9.70...10.30

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1230 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150 Rack travel in m: 10.50...10.70 Aneroid pressure h: 700 159.0...161.0 1000 : (156.0...164.0) cm3 : 5.00 Del.quantity START CUT-OUT Spread 1/min : 220 (240) Speed 1000 : (9.00) FUEL DELIVERY CHARACTERISTICS RATED SPEED 1st version 1st version Control lever Aneroid pressure h: 700 Speed rpm : 750
Del.quantity cm3/: 173.5...175.5
1000 s: (170.5...178.5) position degrees: 46...54 Testing: 1st rack travel in: 9.70 Spread cm3 : 7.00rpm : 1190...1200 Speed 1000 s: (12.0) 2nd rack travel in: 4.00 Aneroid pressure h: 700 Speed rpm : 1250...1280 Aneroid pressure h: -Speed rpm: 500
Del.quantity cm3/: 138.0...140.0
1000 s: (135.0...143.0)
Spread cm3: 7.00 4th rack travel in: 1400 rpm : 0.00,..1.00 Speed LOW IDLE 1 Control lever 1000 s: (12.0) position degrees: 15...23 Testing: **BREAKAWAY** rpm : 100 Speed Minimum rack trave: 6.70 1st version : 300 rom 1mm rack travel less than Rack travel in mm : 5.00...5.20 full load rack tr: 9.70 CONSTANT REGULATION Speed rpm : 1190...1200 rpm : 300...400 Speed STARTING FUEL DELIVERY TORQUE CONTROL Dimension a mm : 0.30 Torque control curve - 1st version Speed rpm : 100 Del.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0) 1st speed rpm : 1150 Rack travel in m: 10.70...10.80 2nd speed rpm : 750 Rack travel in m: 11.00...11.20 3rd speed rpm : 700 Rack travel in m: 11.00...11.20 Remarks: Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rom Pressure hPa : Rack travel mm : 10.00...10.30 Measurement 1/min : 500 Speed 1st pressure hPa : 450 Rack travel in m: 10.10...10.20 2nd pressure hPa : 500

80H

Note remarks

Test sheet : MB 14,6 k 9 Edition : 03.03.89 Replaces : 2.12.88 Test oil : ISO-4113

Combination no. : 0 401 848 763

Injection pump

Pump designation : PE8P120A320LS3807-10 : 0 411 828 713 EP type number

Governor

Governor design. : RQV300...1150PA545-6

: 0 421 813 594 Governer no.

Customer-spec. information

Customer : DAIMLER-BENZ

Engine : 0M422 LA

1st version kW : 276.0 : 2300 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10 : (3.95...4.15) Rack travel in mm : 9.00...12.00 Firing order : 8-7-2-6-3-5-

: 0-45-90-135-180-225-Phasina

270-315

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 1150

Rack travel in mm : 11.50...11.60

Del.quantity cm3/: 17.5...17.7

100 s: (17.2...18.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm: 5.1...5.3 Del.quantity cm3/: 1.2...2.0 100 s: (0.9...2.3)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

travel mm : 1.40...1.60

2nd speed rpm : 800

travel mm : 6.00...6.20

rpm : 1200 3rd speed

: 8.00...8.50 travel mm

4th speed rpm : 1300

: 9.70...10.30 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1190

Speed Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150 Aneroid pressure h: 700 : 175.0...177.0 Del.quantity 1000 : (172.0...180.0) : 5.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 49...57 Testing: 1st rack travel in: 10.50 Speed rpm : 1190...1200 2nd rack travel in: 4.00 Speed rpm : 1250...1280 4th rack travel in: 1400 rpm : 0.00...1.00Speed LOW IDLE 1 Control Lever position degrees: 13...21 Testina: Speed : 100 rpm Minimum rack trave: 6.80 : 300 Speed rpm Rack travel in mm : 5.10...5.30 CONSTANT REGULATION rpm : 300...400 Speed TORQUE CONTROL Dimension a mm : 0.30 Torque control curve - 1st version 1st speed rpm : 1150 Rack travel in m: 11.50...11.60 2nd speed rpm : 750 Rack travel in m: 11.80...12.00 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm Pressure hPa : -: 10.20...10.40 Rack travel mm Measurement 1/min: 500 Speed

FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 : 750 Speed rpm Del.quantity cm3/: 187.0...190.0 1000 s: (184.0...193.0) cm3 : 8.00 1000 s: (12.0) Spread Aneroid pressure h: rpm_ : 500 Speed Del.quantity cm3/: 137.0...139.0 1000 s: (134.0...142.0) Spread cm3 : 8.001000 s: (12.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.50 rpm : 1190...1200 Speed STARTING FUEL DELIVERY Speed rpm_ : 100 Del.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0) Remarks: :

START CUT-OUT

Speed

1/min: 220 (240)

1st pressure hPa : 410

2nd pressure hPa : 490

Rack travel in m: 10.50...10.60

Rack travel in m: 11.10...11.30

Note remarks

Test sheet : MB 14,7 c 4 Edition : 31.03.89 : 9.10.87 Replaces Test oil : ISO-4113

: 0 401 848 789 Combination no.

Injection pump

Pump designation : PE8P110A320LS3842-1

EP type number : 0 411 818 716

Governor

Governor design. : RQ300/1050PA827-3K

Governer no. : 0 421 803 095

Customer-spec. information

Customer : DAIMLER-BENZ

Engine : 0M442

1st version kW : 213.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 0 681 343 009 assembly

Opening.

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.00...4.10 : (3.95...4.15) Prestroke mm

Rack travel in mm : 9.00...12.00 Firing order : 8- 7- 2- 6- 3- 5-

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.90...13.00

Del.quantity cm3/: 13.2...13.4

100 s: (12.9...13.6)

cm3 : 0.4Spread

100 s: (0.8)

2nd speed rpm : 300.0 Rack travel in mm : 8.8...9.0 Del.quantity cm3/: 1.5...2.1 100 s: (1.2...2.3)

Spread cm3 : 0.4100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 1.30...1.50 travel mm 2nd speed rpm : 500

: 5.50...5.70 travel mm

3rd speed rpm : 900 travel mm : 6.90...7.20

4th speed 1050 rom:

travel mm : 7.60...7.90

5th speed : 1100 man

: 10.10...10.60 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600

Rack travel in mm : 14.70...15.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed

Del.quantity : 132.0...136.5) : 4.00 Spread cm3 1000 : (8.00) RATED SPEED 1st version Setting point: Speed rpm Rack travel in mm: 15.2 Testing: 1st rack travel in: 11.90 rpm : 1095...1110 Speed 2nd rack travel in: 4.00 rpm : 1150...1180 Speed 4th rack travel in: 1300 Speed rpm: 0.00...1.50 LOW IDLE 1 Setting point w/out bumper spring : 300 Speed rpm Rack travel in mm: 8.9 Testing: Speed rpm : 200 Minimum rack trave: 10.50 Speed rpm : 300
Rack travel in mm : 8.80...9.00
Rack travel in mm : 2.00 : 450...490 Speed rom : 550 Speed rpm Maximum rack trave: 1.80 TORQUE CONTROL Dimension a mm : 0.50 Torque control curve – 1st version 1st speed rpm : 1050 Rack travel in m: 12.90...13.00 rpm : 600 2nd speed Rack travel in m: 12.90...13.10 3rd speed rpm: 900 Rack travel in m: 13.40...13.60 FUEL DELIVERY CHARACTERISTICS 1st version : 600 Speed rpm Del.quantity cm3/: 119.0...122.0 1000 s: (116.0...125.0) Spread cm3 : 8.001000 s: (11.0) : 900 Speed rpm Del.quantity cm3/: 130.0...134.0 1000 s: (127.0...137.0) Spread cm3 : 8.00 1000 s: (11.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.90

rom : 1095...1110 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0)

Remarks:

H12

Note remarks

Test sheet : MB 14,7 d 5 : 14.04.89 Edition Replaces : 11.11.88 Test oil : ISO-4113

Combination no. : 0 401 848 793

Injection pump

Pump designation : PE8P110A320LS3842 EP type number : 0 411 818 714

Governor

Governor design. : RQV300...1050PA524-12

: 0 421 813 679 Governer no.

Customer-spec. information

Customer : DAIMLER-BENZ

Engine : 0M442

1st version kW : 192.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 0 681 343 009 assembly

Openina .

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.00...4.10 Prestroke mm : (3.95...4.15)

Rack travel in mm : 9.00...12.00

: 8- 7- 2- 6- 3- 5-Firing order

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.50...11.60

Del.quantity cm3/: 11.7...11.9

100 s: (11.4...12.1)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 300.0 Rack travel in mm : 8.4...8.7 Del.quantity cm3/: 1.5...2.1

100 s: (1.2...2.3)

cm3 : 0.4Spread 100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 1.20...1.50 travel mm rpm : 800 2nd speed

: 5.60...6.00 travel mm rpm : 1110 3rd speed

travel mm : 7.80...8.40

rpm : 1150 4th speed

travel mm : 8.80...9.40

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1100

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1050 : 117.0...119.0 Del.quantity : 117.0...121.5)

Spread cm3 : 4.00 1000 : (8.00) RATED SPEED 1st version Control lever position degrees: 48...56 Testing: 1st rack travel in: 10.50 Speed rpm: 1090...1100 2nd rack travel in: 4.00 Speed rpm : 1135...1165 4th rack travel in: 1250 Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 18...26 Testing: Speed rpm : 200 Minimum rack trave: 10.50 : 300 Speed rpm Rack travel in mm : 8.40...8.70 CONSTANT REGULATION rpm : 300...450 Speed START CUT-OUT Speed 1/min: 220 (240) FUEL DELIVERY CHARACTERISTICS 1st version rpm_ : 600 Speed Del.quantity cm3/: 98.0...104.0 1000 s: (95.0...107.0) cm3 : 6.00 Spread 1000 s: (9.00) **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 10.50 rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0)

H14

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks

Test sheet : MB 14,7 d 6 : 29.03.89 Edition Replaces : 1.7.88 Test oil : ISO-4113

: 0 401 848 795 Combination no.

Injection pump

Pump designation : PE8P110A320LS3842 : 0 411 818 714 EP type number

Governor

Governor design. : RQV300..1050PA884-1

Governer no. : 0 421 813 686

Customer-spec. information

: DAIMLER-BENZ Customer

Engine : OM442

1st version kW : 213.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 0 681 343 009 assembly

Opening .

: 172...175 pressure, bar

Test Lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.00...4.10 : (3.95...4.15) Prestroke mm

Rack travel in mm : 9.00...12.00 : 8-7-2-6-3-5-4-1 Firing order

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 750

Rack travel in mm : 12.70...12.80

Del.quantity cm3/: 12.6...12.8

100 s: (12.3...13.0)

cm3 : 0.4Spread

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 8.4...8.8 Del.quantity cm3/ : 1.5...2.1

100 s: (1.2...2.3)

cm3 : 0.4Spread 100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 : 1.10...1.40 1st speed travel mm

rpm : 800 2nd speed

: 5.80...6.20 travel mm

rpm : 1100 3rd speed : 8.20...8.60 travel mm

rpm : 1150 4th speed

: 9.10...9.70 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1085 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

: 126.0...128.0 1000 : (123.5...130.5) Del.quantity

Spread cm3 : 4.00 1000 : (7.50) RATED SPEED 1st version Control lever position degrees: 53...61 Testing: 1st rack travel in: 11.70 Speed rpm : 1090...1100 2nd rack travel in: 4.00 Speed rpm : 1150...1180 4th rack travel in: 1250 Speed rpm : 0.00...1.00 LOW IDLE 1 Control lever position degrees: 18...26 Testing: : 200 Speed rom Minimum rack trave: 10.00 rpm : 300 Speed Rack travel in mm : 6.80...7.00 CONSTANT REGULATION

rpm : 300...400 Speed

START CUT-OUT

Speed 1/min: 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version rpm : 1050 Speed Del.quantity cm3/: 136.0...140.0 1000 s: (133.0...143.0) Spread cm3 : 7.00 1000 s: (10.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.70 Speed rpm : 1090...1100

STARTING FUEL DELIVERY

rpm : 100 Speed Del.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0) Remarks:

H16

BOSCH INJ. PUMP TEST SPECIFICATIONS Firing order Note remarks Test sheet : DAO 14,5 b Edition : 21.04.89 Replaces Test oil : ISO-4113 Combination no. : 0 401 848 803 Injection pump Pump designation : PE8P120A520/4LS3850 EP type number : 0 411 828 723 Governor Governor design. : RQV250...900PA668-8 : 0 421 813 742 Governer no. Customer-spec. information Customer : DAEWOO Engine : D 2848 TI TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 019 assembly Opening pressure, bar : 207...210 Orifice plate diameter mm : 0,8 Test lines : 1 680 750 067 Outside diameter x Wall thickness x Length mm : 6.00x1.50x1000 Speed (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY Speed Test pressure, bar: 25...27

: 4.00...4.10

Rack travel in mm : 9.00...12.00

: (3.95...4.15)

Phasina : 0-45-90-135-180-225-270-315 Tolerance + - 0 : 0.50 (0.75) Time to cyl. no. : 8 BASIC SETTING 1st speed rpm: 900 Rack travel in mm : 11.00...11.10 Del.quantity cm3/: 19.9...20.1 100 s: (19.6...20.4) cm3 : 0.5Spread 100 s: (0.9) 2nd speed rpm : 300.0 Rack travel in mm : 5.9...6.1 Del.quantity cm3/ : 1.7...2.3 100 s: (1.4...2.6) Spread cm3 : 0.8100 s: (1.2) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 300 : 1.30...1.70 travel mm rpm : 650 2nd speed travel mm : 5.80...6.20 rpm : 900 3rd speed : 7.80...8.00 travel mm 4th speed rpm : 1200 travel mm : 11.00...12.00 GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 940 Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 900 Del.quantity : 199.0...204.0) Spread : 5.00 cm3 : (9.00) 1000

: 8- 7- 2- 6- 3- 5-

H17

Prestroke mm

1st version Control lever

position degrees: 64...72

Testina:

1st rack travel in: 10.00 Speed rpm: 940...950 2nd rack travel in: 4.00

Speed rpm : 1030...1060 4th rack travel in: 1150

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 8...16

Testing:

Speed : 100 rpm Minimum rack trave: 7.50
Speed rpm : 250
Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00

Speed rpm : 415...475

START CUT-OUT

1/min : 220 (240) Speed

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.00 Speed rpm : 940...950

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 185.0...205.0 1000 s: (181.0...209.0)

LOW IDLE

rpm : 300 Speed

Rack travel in mm : 5.90...6.10 Del.quantity cm3/: 17.0...23.0 1000 s: (14.0...26.0)

Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

APPLICATION

H18

BOSCH INJ. PUMP TEST SPECIFICATIONS : 10- 9- 4- 1- 8- 7 - 6- 3- 5- 2 Firing order Note remarks Test sheet : MB 17,4 b Edition : 29.03.89 Phasina : 0-45-72-117-144-189-: 11.85 216-261-288-333 : 0.50 (0.75) Replaces Test oil : ISO-4113 Tolerance + - 0 Combination no. : 0 401 849 160 Time to cyl. no. : 10 Injection pump BASIC SETTING Pump designation : PE10P100A320LS842 EP type number : 0 411 809 134 1st speed rpm: 1150 Governor Governor design. : RQ300/1150PA187-2R Rack travel in mm : 12.00...12.10 Governer no. : 0 421 801 112 Del.quantity cm3/: 11.5...11.7 Customer-spec. information Customer : DAIMLER-BENZ 100 s: (11.3...11.9) Engine : OM 403 Spread cm3 : 0.31st version kW : 259.0 100 s: (0.5) Rated speed : 2300 2nd speed rpm : 300.0Rack travel in mm : 7.4...7.6 Del.quantity cm3/ : 1.3...1.9 TEST BENCH REQUIREMENTS Test oil 100 s: (1.0...2.1) inlet temp. °C : 38...42 Spread cm3 : 0.3100 s: (0.5) Overflow valve : 1 417 413 025 GUIDE SLEEVE POSITION Control-lever position Inlet press., bar: 1.50 Degree: -1 Speed rpm : 650 Test nozzle holder Rack travel in mm: 13.80...14.60 : 0 681 343 009 assembly FULL LOAD DELIV. AT FULL LOAD STOP Opening | pressure, bar : 172...175 1st version Speed rpm : 1150 , : 115.5...117.5 1000 : (113.5...119.5) Del.quantity Test lines : 1 680 750 015 : 3.00 Spread cm3 1000 : (5.00) Outside diameter x Wall thickness x Length mm : 6.00x1.50x600 RATED SPEED (A) Injection pump setting values 1st version Insp. values in parentheses Set equal delivery quant. Setting point: per values : 650 Speed rpm Rack travel in mm: 14.2 BEGINNING OF DELIVERY Test pressure, bar: 25...27 Testing: 1st rack travel in: 11.00 Prestroke mm rpm : 1195...1210 ; 3.20...3.30 Speed : (3.35...3.55) 2nd rack travel in: 4.00 Rack travel in mm : 9.00...12.00 rpm : 1235...1265 Speed

H19

4th rack travel in: 1350 rpm : 0.00...1.50 LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 7.5 Testing: rpm : 100 Speed Minimum rack trave: 9.00 Speed rpm : 300 Rack travel in mm : 7.40...7.60 Rack travel in mm : 2.00 : 410...450 Speed rpm TORQUE CONTROL Dimension a mm Torque control curve - 1st version 1st speed rpm : 1150 Rack travel in m: 12.00...12.10 2nd speed rpm : 600 Rack travel in m: 12.00...12.20 FUEL DELIVERY CHARACTERISTICS 1st version : 600 Speed rpm Del.quantity cm3/: 100.5...105.5 1000 s: (98.5...107.5) cm3 : 5.00 1000 s: (7.00) Spread RACK STOP ADJUSTMENT Speed rpm : 650 BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.00 rpm : 1195...1210 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 125.0...145.0 1000 s: (121.0...149.0) Remarks:

Note remarks

Test sheet : MAN 18,2 c Edition : 07.02.89 : 22.1.88 Replaces Test oil : ISO-4113

Combination no. : 0 401 849 734

Injection pump

Pump designation : PE10P120A520/4LS3843

EP type number : 0 411 829 707

Governor

Governor design. : RQ300/1000PA837 Governer no. : 0 421 801 372

Customer-spec. information Customer : MAN

Engine : D2840LF/460

: 338.0 1st version kW Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.90...4.00 : (3.85...4.05)

Rack travel in mm : 9.00...12.00

: 10- 9- 4- 1- - 6- 3- 5-Firing order

Phasing : 0-45-72-117-144-189-

216-261-288-333 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 10

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 11.30...11.40

Del.quantity cm3/: 20.4...20.6

100 s: (20.1...20.9)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300.0 2nd speed

Rack travel in mm: 6.0...6.2 Del.quantity cm3/: 1.7...2.3

100 s: (1.4...2.6)

cm3 : 0.8 Spread 100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure h: 1000

Aneroid F. Del.quantity 1000 : 204.0...206.0

: (201.0...209.0)

: 5.00 Spread cm3

1000

RATED SPEED

1st version

Setting point:

rpm

Rack travel in mm: 20.0

Testing:

1st rack travel in: 10.30 Speed rpm : 1045...1060 2nd rack travel in: 4.00 Speed rpm : 1125...1155 4th rack travel in: 1250 Speed rpm : 0.00...1.00Speed LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 6.1 Testing: Speed rpm: 100
Minimum rack trave: 7.60
Speed rpm: 300
Rack travel in mm: 6.00...6.20
Rack travel in mm: 2.00
Speed rpm: 365...405 TORQUE CONTROL Dimension a mm Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 11.80...11.90 2nd speed rpm : 600 Rack travel in m: 11.80...12.00 Aneroid/Altitude Compensator Test 1st version Setting rpm : 500 hPa : 1000 Speed Pressure Rack travel mm : 11.30...11.40 Measurement Speed 1/min: 500 1st pressure hPa : -Rack travel in m: 10.10...10.20 2nd pressure hPa : 380 Rack travel in m: 10.40...10.50 3rd pressure hPa : 500 Rack travel in m: 10.90...11.10 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.30 Speed rpm : 1045...1060

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 190.0...210.0 1000 s: (186.0...214.0)

LOW IDLE

Speed rpm : 300 Rack travel in mm : 6.00...6.20 Del.quantity cm3/: 17.0...23.0 1000 s: (14.0...26.0) Spread cm3 : 8.00 1000 s: (12.00)

Remarks:

: MAN-NR. 2-7778

1st version

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 144.0...146.0 1000 s: (141.0...149.0)

Note remarks

Test sheet : MAN 18,2 c1 : 07.02.89 Edition Replaces : 22.1.88 Test oil : ISO-4113

Combination no. : 0 401 849 735

Injection pump

Pump designation : PE10P120A520/4LS3843

EP type number : 0 411 829 707

Governor

Governor design. : RQV300...1000PA838

: 0 421 813 585 Governer no.

Customer-spec. information Customer : MAN

Engine : D2840LF/460

1st version kW : 338.0 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Opening |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.90...4.00 : (3.85...4.05) Prestroke mm

Rack travel in mm : 9.00...12.00

: 10-9-4-1-8-7 -6-3-5-2 Firing order

: 0-45-72-117-144-189-216-261-288-333 Phasina

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 10

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 11.30...11.40

Del.quantity cm3/: 20.4...20.6

100 s: (20.1...20.9)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.02nd speed Rack travel in mm : 6.0...6.2 Del.quantity cm3/: 1.7...23

100 s: (1.4...2.6)

Spread cm3 : 0.8100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 : 1.00...1.40 1st speed

travel mm rpm : 500 2nd speed

: 3.10...3.50 travel mm

rpm : 850 3rd speed

travel mm : 6.60...6.90

4th speed rpm : 1000

: 7.70...7.90 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1150 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure h: 1000

Del.quantity : 204.0...209.0) : 5.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 49...57 Testing: 1st rack travel in: 10.30 Speed rpm : 1040...1050 2nd rack travel in: 4.00 Speed rpm : 1115...1145 4th rack travel in: 1250 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 13...21 Testing: Speed rpm : 100 Minimum rack trave: 7.60 rpm : 300 Rack travel in mm : 6.00...6.20 CONSTANT REGULATION Speed rpm : 335...445 Aneroid/Altitude Compensator Test 1st version Setting rpm : 500 Speed hPa : 1000 Pressure Rack travel mm : 11.30...11.40 Measurement $1/\min : 500$ Speed 1st pressure hPa : -Rack travel in m: 10.10...10.20 2nd pressure hPa : 380 Rack travel in m: 10.40...10.50 3rd pressure hPa : 500 Rack travel in m: 10.90...11.10 START CUT-OUT 1/min: 230 (250) Speed FUEL DELIVERY CHARACTERISTICS

Aneroid pressure h: -Speed rpm: 500
Del.quantity cm3/: 144.0...146.0
1000 s: (141.0...149.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.30 Speed rpm : 1040...1050 STARTING FUEL DELIVERY

rpm : 100 Del.quantity cm3/: 190.0...210.0 1000 s: (186.0...214.0) LOW IDLE

Speed rpm : 300 Rack travel in mm : 6.00...6.20 Del.quantity cm3/: 17.0...23.0 1000 s: (14.0...26.0) Spread cm3 : 8.001000 s: (12.00)

Remarks: : MAN-NR. 2-7779

1st version

H24

Note remarks

Test sheet : MAN 17,4 c1 Edition : 28.04.89

Replaces

Test oil : ISO-4113

Combination no. : 0 401 849 744

Injection pump

Pump designation: PE10P120A520/4LS3833

EP type number

: 0 411 829 706

Governor

Governor design: RQ750PA663-7 Governer no. : 0 421 801 331

Customer-spec. information Customer : MAN

Engine : D2840 LE

1st version kW : 352.0 : 1500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Opening |

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.20...4.30 Prestroke mm : (4.15...4.35)

Rack travel in mm : 9.00...12.00

: 10- 9- 4- 1- 8- 7 - 6- 3- 5- 2 Firing order

: 0-45-72-117-144-189-Phasing

216-261-288-333

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 10

BASIC SETTING

1st speed rpm: 700

Rack travel in mm: 12.30...12.40

Del.quantity cm3/: 22.9...23.1

100 s: (22.6...23.4)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 300.0Rack travel in mm: 6.1...6.3 Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.8

100 s: (1.2)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

229.0...231.0 1000 : (226.0...234.0) Del.quantity

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 11.30 Speed rpm : 750...755 2nd rack travel in: 4.00

rpm : 790...803 Speed

4th rack travel in: 950

rpm : 0.00...1.00Speed

STARTING FUEL DELIVERY

Speed rpm

rpm : 100

Remarks:

: MAN-NR. 2-7975

APPLICATION

Generator set

Note remarks

Test sheet : MWM 21,6 a4 Edition : 24.02.89 Replaces : 6.4.88 Test oil : ISO-4113

Combination no. : 0 401 870 091

Injection pump

Pump designation : PE12P120A520/5RS428-

EP type number : 0 411 820 034

Governor

Governor design. : RSUV300...900P0A320-

Governer no. : 0 421 829 107

Customer-spec. information

Customer · MWM

Engine : TBD 234 V12

1st version kW : 600.0 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening .

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm

: (2.75...2.95) Rack travel in mm : 9.00...12.00

: 1- 2- 9- 10- 5- 6-11- 12- 3- 4- 7- 8 Firing order

Phasing : 0-30-60-90-120-150-180-210-240-270-300-

330

: 0.50 (0.75) Tolerance + - 0

BASIC SETTING

1st speed rom : 750

Rack travel in mm : 13.70...13.80

Del.quantity cm3/: 24.9...25.1

100 s: (24.6...25.4)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 5.7...5.9 Del.quantity cm3/ : 2.0...2.6

100 s: (1.7...2.9)

cm3 : 0.8Spread 100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...0.70

Governor spring pre-tension Click setting x : 3.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Del.quantity : 249.0...251.0

: (246.0...254.0) : 5.00 1000

Spread cm3

1000 : (9.00)

RATED SPEED

1st version Control Lever

position degrees: 65...73

H27

Testing: 1st rack travel in: 12.70 Speed rpm : 940...950 2nd rack travel in: 4.00 rpm : 965...995 Speed 4th rack travel in: 1130 Speed rpm : 0.30...1.40LOW IDLE 1 Control lever position degrees: 14...22 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 5.3 Speed rpm : 300
Rack travel in mm : 5.70...5.90
Rack travel in mm : 2.00 rom : 320...380 Speed TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 900 Rack travel in m: 13.70...13.80 2nd speed rpm : 450 Rack travel in m: 13.70...13.80 rpm : 280 3rd speed Rack travel in m: 14.90...15.50 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.70 rpm : 940...950 Speed STARTING FUEL DELIVERY Speed : 100 rpm LOW IDLE Speed rpm Rack travel in mm : 5.70...5.90 Del.quantity cm3/ : 20.0...26.0 1000 s: (17.0...29.0) Spread cm3 : 8.00 1000 s: (12.00) Remarks: APPLICATION

Generator set

Note remarks

Test sheet : DAF 8,3 o11 : 21.04.89 Edition : 12.9.86 Replaces Test oil : ISO-4113

Combination no. : 0 401 876 316

Injection pump

Pump designation : PE6P100A720RS447 EP type number : 0 411 806 191

Governor

Governor design. : RSV250...1200P5A509-

: 0 421 833 199 Governer no.

Customer-spec. information Customer : DAF

Engine : DHT 825

: 162.0 1st version kW Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening .

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.20...3.30 Prestroke mm

: (3.15...3.35)

J01

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

BASIC SETTING

rpm: 1000 1st speed

Rack travel in mm : 11.40...11.50

Del.quantity cm3/: 11.8...12.0

100 s: (11.6...12.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0 Rack travel in mm : 5.2...5.4 Del.quantity cm3/ : 0.8...1.2

100 s: (0.5...1.4) cm3 : 0.3 100 s: (0.5)

Spread

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Speed Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure h: 700

: 118.5...120.5 Del.quantity 1000 : (116.5...122.5)

: 3.50

Spread cm3 1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 58...66

Testing:

1st rack travel in: 10.40

Speed rpm: 1240...1250 2nd rack travel in: 4.00

rpm : 1300...1330 Speed

3rd rack travel in: 4.00 rpm : 1325...1355 Speed 4th rack travel in: 1530 Speed rom : 0.30...1.40LOW IDLE 1 Control lever position degrees: 22...30 Setting point w/out bumper spring Speed rpm : 250 Rack travel in mm: 4.8 Speed : 250 rpm Rack travel in mm : 5.20...5.40 Rack travel in mm : 2.00 : 540...640 Speed COM TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 11.60...11.70 2nd speed rpm : 400 Rack travel in m: 11.60...11.80 3rd speed rpm : 300 Rack travel in m: 11.90...12.40 Aneroid/Altitude Compensator Test 1st version Setting Speed rpm : 600 hPa : 700 rpm Pressure Rack travel mm : 11.40...11.50 Measurement 1/min: 600 Speed 1st pressure hPa : -Rack travel in m: 10.40...10.60 2nd pressure hPa : 315 Rack travel in m: 11.10...11.20 3rd pressure hPa : 225 Rack travel in m: 10.50...10.90 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: rpm : 600 Speed Del.quantity cm3/: 92.5...96.5 1000 s: (90.0...99.0)

full load rack tr: 10.40 Speed rpm : 1240...1250

STARTING FUEL DELIVERY

LOW IDLE

Remarks:

102

BREAKAWAY

1st version

1mm rack travel less than

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet Edition : VOL 7,1 c : 24.02.89 : 12.9.86 Replaces Test oil : ISO-4113 Combination no. : 0 401 876 321 Injection pump Pump designation : PE6P110A320RS497 EP type number : 0 411 816 165 Governor Governor design. : RSV200...1200P1A374-Governer no. : 0 421 833 204 Customer-spec. information Customer : VOLVO Engine : TD71A TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve

: 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder

: 0 681 343 009 assembly

Openina .

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 3.00...3.10 Prestroke mm : (2.95...3.15)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6Phasina : 0-60-120-180-240-300

: 0.50 (0.75) Tolerance + - 0

Time to cyl. no. : 1

BASIC SETTING

1st speed rom: 700

Rack travel in mm: 11.80...11.90

Del.quantity cm3/: 11.6...11.8

100 s: (11.3...12.1)

cm3 : 0.4Spread

100 s: (0.7)

2nd speed rpm : 200.0 Rack travel in mm : 5.4...5.6 Del.quantity cm3/ : 1.6...2.2

100 s: (-) cm3 : 0.3 Spread 100 s: (0.6)

GUIDE SLEEVE POSITION Control-lever position Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900 Del.quantity : 116.0...118.0 Del.quantity : 170.0...121.0)

: 4.00 1000 : (7.50)

RATED SPEED

1st version Control lever

position degrees: 51...59

Testing:

1st rack travel in: 10.80

Speed rbm : 1210...1220

2nd rack travel in: 4.00

rpm : 1240...1270

4th rack travel in: 1410

Speed rom : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 13...21 Setting point w/out bumper spring Speed rpm : 200 Rack travel in mm : 5.0 Speed : 200 rom Rack travel in mm: 5.40...5.60 Rack travel in mm: 2.00 : 280...340 Speed MCT Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm Pressure hPa : 900 Rack travel mm : 11.80...11.90 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 9.80...10.00 2nd pressure hPa : 675
Rack travel in m: 11.60...11.70
3rd pressure hPa : 200 Rack travel in m: 10.10...10.30 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: -Speed rpm : 700 Del.quantity cm3/: 82.0...85.0 1000 s: (79.0...88.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.80 rpm : 1210...1220 Speed STARTING FUEL DELIVERY Speed rom : 100

Del.quantity cm3/: 160.0...190.0

Rack travel in mm : 20.00...21.00

LOW IDLE

J04

1000 s: (160.0...190.0)

Speed rpm : 200
Rack travel in mm : 5.40...5.60
Del.quantity cm3/: 16.0...22.0
Spread cm3 : 3.00
1000 s: (6.00)

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm.
Permissible alteration from 2.20...2.90

:

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : PEN 6,1 q Edition : 10.02.89 Replaces : 9.12.88 Test oil : ISO-4113 Combination no. : 0 401 876 327 Injection pump Pump designation : PE6P110A320RS499 EP type number : 0 411 816 169 Governor Governor design. : RSV325...1400P2A374-Governer no. : 0 421 833 220 Customer-spec. information Customer : VOLVO-PENTA : TAMD61A Engine 1st version kW : 220.0 Rated speed : 2800 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Opening pressure, bar : 172...175 Test lines : 1 680 750 015 Outside diameter x Wall thickness x Length mm : 6.00x1.50x600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order Phasina : 0-60-120-180-240-300 Tolerance + - 0 : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING rpm: 1000 1st speed Rack travel in mm : 11.10...11.20 Del.quantity cm3/: 12.0...12.2 100 s: (11.7...12.5) Spread cm3 : 0.4100 s: (0.7) rpm : 325.0 2nd speed Rack travel in mm : 4.1...4.3 Del.quantity cm3/: 1.1...1.5 100 s: (0.9...1.7) cm3 : 0.3Spread 100 s: (0.6) GUIDE SLEEVE POSITION Control-lever position Degree: -3 Speed rpm: 800 Rack travel in mm: 0.30...0.70 Governor spring pre-tension Click setting x : 6.00 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1000 Aneroid pressure h: 900 : 120.5...122.5 1000 : (117.5...125.5) Del.quantity Spread cm3 : 4.00 1000 : (7.50) RATED SPEED 1st version Control lever position degrees: 50...58

BEGINNING OF DELIVERY Test pressure, bar: 25...27

Prestroke mm

: 2.50...2.60

: (2.45...2.65)

Testing:

Speed

1st rack travel in: 10.10

rpm : 1450...1460

2nd rack travel in: 4.00 Speed rpm : 1530...1560 4th rack travel in: 1630 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 13...21 Setting point w/out bumper spring Speed rpm : 325 Rack travel in mm : 3.7 Speed rpm Rack travel in mm : 4.10...4.30 Rack travel in mm : 2.00 Speed rpm : 380...440 Aneroid/Altitude Compensator Test 1st version Setting Speed rpm : 500 hPa : 900 Pressure : 11.00...11.20 Rack travel mm Measurement $1/\min : 500$ Speed 1st pressure hPa : -Rack travel in m: 8.50...8.70 2nd pressure hPa : 360 Rack travel in m: 8.70...8.80 3rd pressure hPa : 730 Rack travel in m: 10.70...10..80 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 900 rpm : 1400 Speed Del.quantity cm3/: 122.5...126.5 1000 s: (119.5...129.5) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 54.5...58.5 1000 s: (51.5...61.5) **BREAKAWAY** 1st version 1mm rack travel less than

1st version 1mm rack travel less than full load rack tr: 10.10 Speed rpm : 1450...1460 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 135.0...165.0 1000 s: (-)

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.10...4.30
Del.quantity cm3/: 11.0...15.0
1000 s: (9.0...17.0)
Spread cm3 : 3.00
1000 s: (6.00)

Remarks:

APPLICATION

Navy

Note remarks

Test sheet : ENA 10,1 f Edition : 24.02.89 : 25.3.88 Replaces Test oil : ISO-4113

Combination no. : 0 401 876 332

Injection pump

Pump designation : PE6P100A820LS130 : 0 411 806 179 EP type number

Governor

Governor design. : RSV250...1000P1A532

: 0 421 833 273 Governer no.

Customer-spec. information Customer : ENASA

Engine : 95 T1 AX

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 9.00...12.00 firing order : 1-5-3-6Phasing : 0-60-120-180-240-300

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 750

Rack travel in mm : 11.90...12.00

Del.quantity cm3/: 11.3...11.5

100 s: (11.1...11.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0 Rack travel in mm : 7.9...8.1 Del.quantity cm3/ : 1.8...2.2

100 s: (1.5...2.4)

cm3 : 0.3 Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...0.70

Governor spring pre-tension Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 750 Speed

1000 : (111.0...117.0) Del.quantity

: 3.50 cm3

Spread 1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 40...48

Testina:

1st rack travel in: 10.90 rpm : 790...800 Speed

2nd rack travel in: 4.00 rpm : 825...855 Speed

3rd rack travel in: 4.00

rpm : 835...865

4th rack travel in: 1000

rpm : 0.30...1.40 Speed LOW IDLE 1 Control Lever position degrees: 19...27 Setting point w/out bumper spring : 250 Speed rom Rack travel in mm: 5.5 Testina: Speed rpm : 100 Minimum rack trave: 19.50 Speed rpm: 250 Rack travel in mm: 5.90...6.10 Rack travel in mm: 2.00 Speed rpm: 330...390 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 750 Rack travel in m: 11.90...12.00 2nd speed rpm : 450 Rack travel in m: 11.90...12.00 3rd speed rpm : 290 Rack travel in m: 13.20...13.80 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.90 Speed rpm : 790...800 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 260.0...280.0 1000 s: (256.0...284.0) Rack travel in mm : 19.00...21.00 LOW IDLE Speed rpm : 250 Rack travel in mm : 5.90...6.10 Remarks: APPLICATION Special-purpose vehicle

Note remarks

Test sheet : ENA 10,1 f1 Edition : 24.02.89 Replaces : 7.10.88 Test oil : ISO-4113

Combination no. : 0 401 876 332A

Injection pump

Pump designation : PE6P100A820LS130 : 0 411 806 179 EP type number

Governor

Governor design. : RSV250...1000P1A532

: 0 421 833 273 Governer no.

Customer-spec. information Customer : ENASA

Engine : 95 A1 COMR 400

1st version kW : 125.0 : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90 : (2.75...2.95)
Rack travel in mm : 9.00...12.00

J09

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rom : 1050

Rack travel in mm : 11.40...11.50

Del.quantity cm3/: 11.0...11.2

100 s: (10.8...11.4)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 250.0Rack travel in mm: 7.9...8.1 Del.quantity cm3/: 1.8...2.2

100 s: (1.5...2.4) Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

: 110.0...112.0 Del.quantity 1000 : (108.0...114.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 50...58

Testing:

1st rack travel in: 10.40

rpm : 1060...1065 Speed

2nd rack travel in: 4.00

rpm : 1090...1120 Speed

3rd rack travel in: 4.00 Speed rpm : 1100...1130 4th rack travel in: 1250 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 15...23 Setting point w/out bumper spring Speed rpm : 200 Rack travel in mm : 5.5 Testina: Speed rpm : 100 Minimum rack trave: 19.50 rpm : 200 Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00 Speed : 310...370 rpm TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1050 Rack travel in m: 11.40...11.50 2nd speed rpm : 450 Rack travel in m: 11.40...11.50 3rd speed rpm : 250 Rack travel in m: 12.60...13.20 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.40 Speed rpm : 1060...1065 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 260.0...280.0 1000 s: (256.0...284.0) Rack travel in mm : 19.00...21.00 LOW IDLE Speed rpm : 200 Rack travel in mm : 5.90...6.10 Remarks:

Note remarks

Test sheet : ENA 10,1 f2 Edition : 24.02.89

Replaces

Test oil : ISO-4113

Combination no. : 0 401 876 332B

Injection pump

Pump designation : PE6P100A820LS130

Governor

Governor design. : RSV250...1000P1A532

: 0 421 833 273 Governer no.

Customer : ENASA

: 95 A1 COMI 4

1st version kW : 114.0 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening .

pressure, bar : 172...175

Outside diameter

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm

Rack travel in mm : 9.00...12.00

EP type number : 0 411 806 179

Customer-spec. information

Engine

Test lines : 1 680 750 015

x Wall thickness

x Length mm : 6.00X1.50X600

BEGINNING OF DELIVERY

: (2.75...2.95)

Firing order

: 1-5-3-6-2-4

Phasing

: 0-60-120-180-240-300

Tolerance + - °

: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed

rpm : 1000

Rack travel in mm : 11.00...11.10

Del.guantity cm3/: 10.0...10.2

100 s: (9.8...10.4)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 250.0 2nd speed Rack travel in mm: 7.9...8.1 Del.quantity cm3/: 1.8...2.2 100 s: (1.5...2.4)

Spread

cm3 : 0.3 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1000 Del.quantity

: 100.0...102.0 1000 : (98.0...104.0)

Spread cm3

: 3.50

: (6.00) 1000

RATED SPEED

1st version

Control Lever

position degrees: 49...57

Testing:

1st rack travel in: 10.00

Speed rpm : 1010...1015

2nd rack travel in: 4.00

rpm : 1040...1070 Speed

3rd rack travel in: 4.00 rpm : 1050...1080 Speed 4th rack travel in: 1250 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 15...23 Setting point w/out bumper spring rpm : 200 Rack travel in mm: 5.5 Testing: Speed rpm : 100 Minimum rack trave: 19.50 rpm : 200 Rack travel in mm: 5.90...6.10
Rack travel in mm: 2.00
Speed rpm: 310...370 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 11.00...11.10 2nd speed rpm : 450 Rack travel in m: 11.00...11.10 3rd speed rpm : 250 Rack travel in m: 12.20...12.80 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.00 Speed rpm : 1010...1015 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 260.0...280.0 1000 s: (256.0...284.0) Rack travel in mm : 19.00...21.00 LOW IDLE Speed rpm : 200 Rack travel in mm : 5.90...6.10 Remarks:

Note remarks

Test sheet : ENA 10,1 f3 : 24.02.89 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 401 876 3320

Injection pump

Pump designation : PE6P100A820LS130 : 0 411 806 179 EP type number

Governor

Governor design. : RSV250...1000P1A532

Governer no. : 0 421 833 273

Customer-spec. information Customer : ENASA

: 95 AI COEB 2 Engine

: 113.0 1st version kW : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening 1

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter

x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm : (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 900

Rack travel in mm : 11.60...11.70

Del.quantity cm3/: 10.9...11.1

100 s: (10.7...11.3)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 250.0 2nd speed Rack travel in mm: 7.9...8.1 Del.quantity cm3/: 1.8...2.2

100 s: (1.5...2.4) cm3 : 0.3 100 s: (0.5) Spread

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Del.quantity : 109.0...111.0 1000 : (107.0...113.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 44...52

Testing:

1st rack travel in: 10.60 rpm : 905...910 Speed 2nd rack travel in: 4.00

: 935...965 Speed rpm

3rd rack travel in: 4.00 rpm : 945...975 Speed 4th rack travel in: 1100 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 19...27 Setting point w/out bumper spring Speed rpm : 250 Rack travel in mm : 5.5 Testina: Speed rpm : 100 Minimum rack trave: 19.50 Speed rpm : 250
Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00
Speed rpm : 340...400 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 900 Rack travel in m: 11.60...11.70 2nd speed rpm : 450 Rack travel in m: 11.60...11.70 3rd speed rpm : 290 Rack travel in m: 12.80...13.40 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.60 Speed rpm : 905...910 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 260.0...280.0 1000 s: (256.0...284.0) Rack travel in mm: 19.00...21.00 LOW IDLE Speed rpm : 250 Rack travel in mm : 5.90...6.10 Remarks:

Note remarks

Test sheet : ENA 10,1 f4 Edition : 24.02.89

Replaces : -

Test oil : ISO-4113

Combination no. : 0 401 876 3320

Injection pump

Pump designation : PE6P100A820LS130 EP type number : 0 411 806 179

Governor

Governor design. : RSV250...1000P1A532

Governer no. : 0 421 833 273

Customer-spec. information Customer : ENASA

Engine : 95 A1 COEB 1

1st version kW : 97.0 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening .

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 750

Rack travel in mm : 11.60...11.70

Del.quantity cm3/: 10.7...10.9

100 s: (10.5...11.1)

Spread cm3: 0.3

100 s: (0.6)

2nd speed rpm : 250.0 Rack travel in mm : 7.9...8.1

Del.quantity cm3/: 1.8...2.2

100 s: (1.5...2.4) Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3

peed rpm: 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 750

Del.quantity : 107.0...109.0 1000 : (105.0...111.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control Lever

position degrees: 38...46

Testing:

1st rack travel in: 10.60

Speed rpm : 755...760

2nd rack travel in: 4.00

Speed rpm : 780...810

3rd rack travel in: 4.00 rpm : 790...820 Speed 4th rack travel in: 1000 riom : 0.30...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 19...27

Setting point w/out bumper spring Speed rpm : 250 Rack travel in mm : 5.5

Testing:

Speed rpm : 100 Minimum rack trave: 19.50 rpm : 250 Speed

Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00

: 330...390 Speed rpm

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 750

Rack travel in m: 11.60...11.70

2nd speed rpm : 450

Rack travel in m: 11.60...11.70

3rd speed rpm : 300

Rack travel in m: 12.80...13.40

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.60

rpm : 755...760 Speed

STARTING FUEL DELIVERY

LOW IDLE

Speed rpm : 250 Rack travel in mm : 5.90...6.10

Remarks:

Note remarks

: ENA 10,1 f5 : 24.02.89 Test sheet Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 401 876 332E

Injection pump

Pump designation : PE6P100A820LS130 EP type number : 0 411 806 179

Governor

Governor design. : RSV250...1000P1A532

: 0 421 833 273 Governer no.

Customer-spec. information Customer : ENASA

: 95 T1 ACML 4 Engine

: 158.0 1st version kW Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 950

Rack travel in mm : 14.10...14.20

Del.quantity cm3/: 16.2...16.4

100 s: (16.0...16.6)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0Rack travel in mm: 7.9...8.1 Del.quantity cm3/: 1.8...2.2 100 s: (1.5...2.4)

cm3 : 0.3 100 s: (0.5) Spread

GUIDE SLEEVE POSITION Control-lever position

Dearee: -3

rpm : 800 Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 950

Del.quantity : 162.0...164.0 1000 : (160.0...166.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version Control Lever

position degrees: 47...55

Testing:

1st rack travel in: 13.10 rpm : 960...965 Speed 2nd rack travel in: 4.00

rpm : 1000...1030 Speed

3rd rack travel in: 4.00 Speed rpm : 1010...1040 4th rack travel in: 1200 Speed rpm : 0.30...1.40

LOW IDLE 1 Control Lever

position degrees: 15...23 Setting point w/out bumper spring

Speed rpm : 200 Rack travel in mm : 5.5

Testing:

rpm : 100 Speed Minimum rack trave: 19.50 rpm : 200 Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00 : 320...380 Speed rom

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 950
Rack travel in m: 14.10...14.20
2nd speed rpm : 450
Rack travel in m: 14.10...14.20

3rd speed rpm : 250 Rack travel in m: 15.30...15.90

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.10 rpm : 960...965 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 260.0...280.0 1000 s: (256.0...284.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 200 Rack travel in mm : 5.90...6.10

Remarks:

Note remarks

: ENA 10,1 f6 Test sheet : 24.02.89 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 401 876 332F

Injection pump

Pumo designation : PE6P100A820LS130 : 0 411 806 179 EP type number

Governor

Governor design: : RSV250...1000P1A532

Governer no. : 0 421 833 273

Customer-spec. information Customer : ENASA

Engine : 95 T1 A0EA 2

1st version kW : 147.0 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening 1

pressure, bar : 172...175

Test lines : 1 680 750 015

Cutside diameter x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm

: (2.75...2.95) Rack travel in mm : 9.00...12.00

J19

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

rpm: 900 1st speed

Rack travel in mm : 14.20...14.30

Del.quantity cm3/: 16.3...16.5

100 s: (16.1...16.7)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 250.0 2nd speed Rack travel in mm: 7.9...8.1 Del.quantity cm3/: 1.8...2.2 100 s: (1.5...2.4)

cm3 : 0.3 100 s: (0.5) Spread

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

: 163.0...165.0 Del.quantity 1000 : (161.0...167.0)

Spread : 3.50 cm3

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 45...53

Testing:

1st rack travel in: 13.20

Speed rpm : 905...910

2nd rack travel in: 4.00

rpm : 935...965 Speed

3rd rack travel in: 4.00 rpm : 945...975 Speed 4th rack travel in: 1150 rom : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 19...27 Setting point w/out bumper spring Speed rpm : 250 Rack travel in mm : 5.5 Testing: Speed rpm : 100 Minimum rack trave: 19.50 Speed rpm : 250 Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00 Speed : 340...400 man TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 900 Rack travel in m: 14.20...14.30 2nd speed rpm : 450 Rack travel in m: 14.20...14.30 3rd speed rpm : 290 Rack travel in m: 15.40...16.00 BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 13.20 rpm : 905...910 Speed STARTING FUEL DELIVERY Speed : 100 rpm Del.quantity cm3/: 260.0...280.0 1000 s: (256.0...284.0) Rack travel in mm: 19.00...21.00 LOW IDLE Speed rpm : 250 Rack travel in mm : 5.90...6.10 Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : ENA 10,1 f7 Edition : 24.02.89 Replaces Test oil : ISO-4113 Combination no. : 0 401 876 332G Injection pump Pump designation : PE6P100A820LS130 : 0 411 806 179 EP type number Governor. Governor design. : RSV250...1000P1A532 Governer no. : 0 421 833 273 Customer-spec. information Customer : ENASA : 95 T1 AOEB 1 Engine 1st version kW : 146.0 Rated speed : 2000 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder assembly : 0 681 343 009 Openina pressure, bar : 172...175 Test Lines : 1 680 750 015 Outside diameter x Wall thickness x Length mm : 6.00x1.50x600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

Firing order : 1-5-3-6-2-4 Phasing : 0-60-120-180-240-300 Tolerance + - 0 : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 750Rack travel in mm : 14.40...14.50 Del.quantity cm3/: 16.7...16.9 100 s: (16.5...17.1) cm3 : 0.3Spread 100 s: (0.6) 2nd speed rpm : 250.0Rack travel in mm: 7.9...8.1 Del.quantity cm3/: 1.8...2.2 100 s: (1.5...2.4) Spread cm3 : 0.3100 s: (0.5) GUIDE SLEEVE POSITION Control-lever position Degree: -3 rpm : 800 Rack travel in mm : 0.30...0.70 Governor spring pre-tension Click setting x : 4.50 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 750 Del.quantity : 167.0...169.0 1000 : (165.0...171.0) : 3.50 Spread cm3 1000 : (6.00) RATED SPEED 1st version Control lever position degrees: 39...47 Testing: 1st rack travel in: 13.40 Speed rpm : 755...760

2nd rack travel in: 4.00 Speed rpm : 780...810

BEGINNING OF DELIVERY Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90 : (2.75...2.95)
Rack travel in mm : 9.00...12.00

3rd rack travel in: 4.00 Speed rpm: 790...820 4th rack travel in: 1000 Speed rpm : 0.30...1.40 LOW IDLE 1 Control Lever position degrees: 19...27 Setting point w/out bumper spring nom : 250 Rack travel in mm: 5.5 Testing: rpm : 100 Speed Minimum rack trave: 19.50 rpm : 250 Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00 Speed : 330...390 rpm TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 750 Rack travel in m: 14.40...14.50 2nd speed rpm : 450 Rack travel in m: 14.40...14.50 3rd speed rpm : 300 Rack travel in m: 15.60...16.20 BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 13.40 rpm : 755...760 Speed STARTING FUEL DELIVERY LOW IDLE Speed rpm : 250 Rack travel in mm : 5.90...6.10 Remarks:

Note remarks

Test sheet : ENA 10.1 f8 Edition : 24.02.89

Replaces : -

Test oil : ISO-4113

Combination no. : 0 401 876 332H

Injection pump

Pump designation : PE6P100A820LS130 EP type number : 0 411 806 179

Governor

Governor design. : RSV250...1000P1A532

Governer no. : 0 421 833 273

Customer—spec. information Customer : ENASA

Engine : 95 A1 COIB 4

1st version kW : 120.0 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 11.80...11.90

Del.quantity cm3/: 11.5...11.7

100 s: (11.3...11.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0 Rack travel in mm : 7.9...8.1 Del.quantity cm3/ : 1.8...2.2

100 s: (1.5...2.4) Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm : 800 Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1000

Del.quantity : 115.0...117.0 1000 : (113.0...119.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 49...57

Testing:

1st rack travel in: 10.80

Speed rpm : 1010...1015

2nd rack travel in: 4.00

Speed rpm : 1040...1070

3rd rack travel in: 4.00 Speed rpm: 1050...1080 4th rack travel in: 1250 Speed rpm : 0.30...1.40 LOW IDLE 1 Control Lever position degrees: 15...23 Setting point w/out bumper spring Speed rpm : 200 Rack travel in mm : 5.5 Testing: Speed rpm : 100 Minimum rack trave: 19.50 Speed rpm : 200 Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00 Speed rpm : 310...370 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 11.80...11.90 2nd speed rpm : 450 Rack travel in m: 11.80...11.90 3rd speed rpm : 250 Rack travel in m: 13.00...13.60 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.80 rpm : 1010...1015 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 260.0...280.0 1000 s: (256.0...284.0) Rack travel in mm : 19.00...21.00 LOW IDLE Speed rpm : 200 Rack travel in mm : 5.90...6.10 Remarks:

Note remarks

Test sheet Edition

: ENA 10,1 f9 : 24.02.89

Replaces

Test oil

: ISO-4113

Combination no.

: 0 401 876 332K

Injection pump

EP type number

Pump designation : PE6P100A820LS130 : 0 411 806 179

Governor

Governor design. : RSV250...1000P1A532

Governer no.

: 0 421 833 273

Customer-spec. information

Customer

: ENASA

Engine

: 95 T1 AOIB 4

1st version kW

: 165.0

Rated speed

: 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 0 681 343 009

Opening

pressure, bar

: 172...175

Test Lines

: 1 680 750 015

Outside diameter

x Wall thickness

x Length mm

: 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

J25

Firing order

: 1-5-3-6-2-4

Phasing

: 0-60-120-180-240-300

Tolerance + - 0

: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed

rpm: 950

Rack travel in mm : 14.20...14.30

Del.quantity cm3/: 16.3...16.5

100 s: (16.1...16.7)

Spread

cm3 : 0.3

100 s: (0.6)

2nd speed

rpm : 250.0

Rack travel in mm: 7.9...8.1 Del.quantity cm3/: 1.8...2.2 100 s: (1.5...2.4)

cm3 : 0.3

Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 950

Del.quantity : 103.0...167.0)

: 3.50 cm3

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 47...55

Testing:

Speed

1st rack travel in: 13.20

Speed

rpm : 960...965

2nd rack travel in: 4.00

rom

: 1000...1030

3rd rack travel in: 4.00 rpm : 1010...1040 Speed 4th rack travel in: 1200 Speed rom : 0.30...1.40LOW IDLE 1 Control Lever position degrees: 15...23 Setting point w/out bumper spring Speed rpm : 200 Rack travel in mm : 5.5 Testing: Speed : 100 rpm Minimum rack trave: 19.50 Speed : 200 rpm Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00 Speed rom : 320...380 TORQUE CONTROL Torque control curve - 1st version rpm : 950 1st speed Rack travel in m: 14.20...14.30 2nd speed rpm : 450 Rack travel in m: 14.20...14.30 3rd speed rpm : 250 Rack travel in m: 15.40...16.00 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 13.20 Speed rpm : 960...965 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 260.0...280.0 1000 s: (256.0...284.0) Rack travel in mm : 19.00...21.00 LOW IDLE Speed rpm : 200 Rack travel in mm : 5.90...6.10 Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Firing order Note remarks Test sheet : ENA 10,1f10 Edition : 24.02.89 Replaces Test oil : ISO-4113 Combination no. : 0 401 876 332L Injection pump Pump designation : PE6P100A820LS130 EP type number : 0 411 806 179 Governor Governor design. : RSV250...1000P1A532 Governer no. : 0 421 833 273 Customer-spec. information Customer : ENASA Engine : 95 T1 AOIR 43 : 166.0 1st version kW Rated speed : 2000 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder assembly : 0 681 343 009 Opening : 172...175 pressure, bar Test Lines : 1 680 750 015 Outside diameter x Wall thickness x Length mm : 6.00X1.50X600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

+	
‡	Phasing : 0-60-120-180-240-300
Ŧ	Tolerance + - 0 : 0.50 (0.75)
Ŧ	Time to cyl. no. : 1
Ī	BASIC SETTING
I	1st speed rpm: 1000
Ŧ	Rack travel in mm : 14.1014.20
I	Del.quantity cm3/: 16.316.5
<u> </u>	100 s: (16.116.7)
<u> </u>	Spread cm3: 0.3
1	100 s: (0.6)
+++++++++++++++++++++++++++++++++++++++	2nd speed rpm : 250.0 Rack travel in mm : 7.98.1 Del.quantity cm3/ : 1.82.2 100 s: (1.52.4)
†	Spread cm3 : 0.3 100 s: (0.5)
Ī	GUIDE SLEEVE POSITION Control-lever position Degree: -3
†	Speed rpm : 800 Rack travel in mm : 0.300.70
T †	Governor spring pre-tension Click setting $x : 4.50$
+	FULL LOAD DELIV. AT FULL LOAD STOP
+++++	1st version Speed rpm : 1000 Del.quantity : 163.0165.0 1000 : (161.0167.0) Spread cm3 : 3.50 1000 : (6.00)
Ŧ	RATED SPEED
I I	1st version Control lever position degrees: 4957
┞╸┩╸┩╸┩╸┩╸┩╸┩╸┩╸┩╸┩╸┩╸┩╸┩ ╸ ┩	Testing: 1st rack travel in: 13.10 Speed rpm : 10101015 2nd rack travel in: 4.00 Speed rpm : 10451075

: 1-5-3-6-2-4

per values

BEGINNING OF DELIVERY

Prestroke mm

Test pressure, bar: 25...27

Rack travel in mm : 9.00...12.00

: 2.80...2.90

: (2.75...2.95)

3rd rack travel in: 4.00 rpm : 1055...1085 Speed 4th rack travel in: 1250 rpm : 0.30...1.40Speed LOW IDLE 1 Control Lever position degrees: 15...23 Setting point w/out bumper spring Speed rpm : 200 Rack travel in mm : 5.5 Testing: Speed rpm : 100 Minimum rack trave: 19.50 rpm : 200 Speed Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00 Speed rpm : 310...370 TORQUE CONTROL Torque control curve - 1st version rpm : 1000 1st speed Rack travel in m: 14.10...14.20 2nd speed rpm : 450 Rack travel in m: 14.10...14.20 3rd speed rpm : 250 Rack travel in m: 15.30...15.90 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 13.10 Speed rpm : 1010...1015 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 260.0...280.0 1000 s: (256.0...284.0) Rack travel in mm : 19.00...21.00 LOW IDLE Speed rpm : 200 Rack travel in mm : 5.90...6.10 Remarks:

Note remarks

Test sheet : ENA 10,1f11 Edition : 24.02.89

Replaces : -

Test oil : ISO-4113

Combination no. : 0 401 876 332M

Injection pump

Pump designation : PE6P100A820LS130 EP type number : 0 411 806 179

Governor

Governor design. : RSV250...1000P1A532

Governer no. : 0 421 833 273

Customer—spec. information Customer : ENASA

Engine : 9105.42.25.43

1st version kW : 132.0 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. Values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 900

Rack travel in mm : 11.70...11.80

Del.quantity cm3/: 11.1...11.3

100 s: (10.9...11.5)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0 Rack travel in mm : 7.9...8.1 Del.quantity cm3/ : 1.8...2.2 100 s: (1.5...2.4)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

speed rpm: 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 900

Del.quantity : 111.0...113.0 1000 : (109.0...115.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 47...55

Testing:

1st rack travel in: 10.70 Speed rpm : 965...975 2nd rack travel in: 4.00

Speed rpm : 1000...1030

K01

3rd rack travel in: 4.00 rpm : 1010...1040 Speed 4th rack travel in: 1200 Speed rpm : 0.30...1.40 LOW IDLE 1 Control Lever position degrees: 15...23 Setting point w/out bumper spring Speed rpm : 200 Rack travel in mm : 5.5 Testing: Speed rpm : 100 Minimum rack trave: 19.50 rpm : 200 Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00 Speed rpm : 320...380 TORQUE CONTROL Torque control curve - 1st version rpm : 900 1st speed Rack travel in m: 11.70...11.80 2nd speed rpm : 450 Rack travel in m: 11.70...11.80 3rd speed rpm : 250 Rack travel in m: 12.90...13.50 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.70 rpm : 965...975 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 260.0...280.0 1000 s: (256.0...284.0) Rack travel in mm : 19.00...21.00 LOW IDLE Speed rpm : 200 Rack travel in mm : 5.90...6.10 Remarks:

Note remarks

Test sheet : ENA 10,1f12 Edition : 24.02.89

Replaces

Test oil : ISO-4113

Combination no. : 0 401 876 332N

Injection pump

Pump designation : PE6P100A820LS130 EP type number : 0 411 806 179

Governor

Governor design. : RSV250...1000P1A532

: 0 421 833 273 Governer no.

Customer-spec. information Customer : ENASA

: 9100.14.25.32 Engine

1st version kW : 125.0 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00X1.50X600 x Lenath mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

K03

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

rpm: 1000 1st speed

Rack travel in mm : 11.60...11.70

Del.quantity cm3/: 11.0...11.2

100 s: (10.8...11.4)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 250.0 2nd speed Rack travel in mm : 7.9...8.1 Del.quantity cm3/: 1.8...2.2 100 s: (1.5...2.4)

cm3 : 0.3 Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del.quantity : 110.0...112.0 1000 : (108.0...114.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 49...57

Testina:

1st rack travel in: 10.60

rpm : 1010...1020 Speed

2nd rack travel in: 4.00

rpm : 1045...1055 Speed

3rd rack travel in: 4.00 Speed rpm : 1055...1085 4th rack travel in: 1250 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 19...27 Setting point w/out bumper spring Speed rpm : 250 Rack travel in mm : 5.5 Testing: Speed rpm : 100 Minimum rack trave: 19.50 Speed rpm : 250 Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00 rpm : 340...400 Speed TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 11.60...11.70 2nd speed rpm : 450 Rack travel in m: 11.60...11.70 3rd speed rpm : 250 Rack travel in m: 12.80...13.40 BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.60 Speed rpm : 1010...1020 STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 260.0...280.0 1000 s: (256.0...284.0) Rack travel in mm : 19.00...21.00 LOW IDLE Speed rpm Rack travel in mm : 5.90...6.10 Remarks:

Note remarks

Test sheet : ENA 10,1f13 Edition : 24.02.89

Replaces :

Test oil : ISO-4113

Combination no. : 0 401 876 332R

Injection pump

Pump designation : PE6P100A820LS130 EP type number : 0 411 806 179

Governor

Governor design. : RSV250...1000P1A532

Governer no. : 0 421 833 273

Customer—spec. information Customer : ENASA

Engine : 9100.04

1st version kW : 107.0 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

K05

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 900

Rack travel in mm : 11.40...11.50

Del.quantity cm3/: 10.4...10.6

100 s: (10.2...10.8)

Spread cm3: 0.3

100 s: (0.6)

2nd speed rpm : 250.0 Rack travel in mm : 7.9...8.1

Del.quantity cm3/: 1.8...2.2 100 s: (1.5...2.4)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

ver position
Degree: -3

peed rpm: 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 900

Del.quantity : 104.0...106.0 1000 : (102.0...108.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control Lever

position degrees: 44...52

Testing:

1st rack travel in: 10.40

Speed rpm : 915...925

2nd rack travel in: 4.00

Speed rpm : 950...960

3rd rack travel in: 4.00 Speed rpm : 960...990 4th rack travel in: 1150 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 19...27 Setting point w/out bumper spring rpm : 250 Rack travel in mm: 5.5 Testing: Speed rpm : 100 Minimum rack trave: 19.50 Speed rpm : 250 Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00 Speed : 340...400 rpm TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 900 Rack travel in m: 11.40...11.50 2nd speed rpm : 450 Rack travel in m: 11.40...11.50 3rd speed rpm : 250 Rack travel in m: 12.60...13.20 BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.40 rpm : 915...925 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 260.0...280.0 1000 s: (256.0...284.0) Rack travel in mm : 19.00...21.00 LOW IDLE

Speed rpm : 250 Rack travel in mm : 5.90...6.10

Remarks:

Note remarks

Test sheet : ENA 10,1f14 Edition : 24.02.89

Replaces

Test oil : ISO-4113

Combination no. : 0 401 876 332s

Injection pump

Pump designation : PE6P100A820LS130 EP type number : 0 411 806 179

Governor

Governor design. : RSV250...1000P1A532

Governer no. : 0 421 833 273

Customer-spec. information Customer : ENASA

Engine : 9105.05

1st version kW : 86.0 : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm : (2.75...2.95)

Rack travel in mm : 9.00...12.00

K07

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 750

Rack travel in mm : 12.10...12.20

Del.quantity cm3/: 11.6...11.8

100 s: (11.4...12.0)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 250.0 Rack travel in mm : 7.9...8.1 Del.quantity cm3/: 1.8...2.2

100 s: (1.5...2.4) Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

: 116.0...118.0 Deliguantity 1000 : (114.0...120.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 38...46

Testing:

1st rack travel in: 11.10 rpm : 760...770 Speed

2nd rack travel in: 4.00

Speed rpm : 775...805

3rd rack travel in: 4.00 rpm : 785...815 Speed 4th rack travel in: 1000 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 19...27 Setting point w/out bumper spring Speed rpm : 250 Rack travel in mm : 5.5 Testing: Speed rpm : 100 Minimum rack trave: 19.50 Speed rpm : 250
Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00
Speed rpm : 330...390 TORQUE CONTROL Torque control curve - 1st version rpm : 750 1st speed Rack travel in m: 12.10...12.20 2nd speed rpm : 450 Rack travel in m: 12.10...12.20 3rd speed rpm : 290 Rack travel in m: 13.30...13.90 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.10 Speed rpm : 760...770 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 260.0...280.0 1000 s: (256.0...284.0) Rack travel in mm : 19.00...21.00 LOW IDLE Speed rpm : 250 Rack travel in mm : 5.90...6.10 Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : ENA 10,1f15 : 24.02.89 Edition Replaces Test oil : ISO-4113 Combination no. : 0 401 876 332T Injection pump Pump designation : PE6P100A820LS130 EP type number : 0 411 806 179 Governor Governor design. : RSV250...1000P1A532 : 0 421 833 273 Governer no. Customer-spec. information Customer : ENASA : 9109.04 Engine 1st version kW : 140.0 Rated speed : 2000 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder assembly : 0 681 343 009 **Opening** pressure, bar : 172...175 Test lines : 1 680 750 015 Outside diameter x Wall thickness x Length mm : 6.00X1.50X600 (A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant. per values BEGINNING OF DELIVERY Test pressure, bar: 25...27 : 2.80...2.90 Prestroke mm : (2.75...2.95) Rack travel in mm : 9.00...12.00 K09

Firing order : 1-5-3-6-2-4 Phasing : 0-60-120-180-240-300 Tolerance $+ - \circ : 0.50 (0.75)$ Time to cyi. no. : 1 BASIC SETTING 1st speed rom: 900 Rack travel in mm : 13.20...13.30 Del.quantity cm3/: 14.2...14.4 100 s: (14.0...14.6) cm3 : 0.3Spread 100 s: (0.6) 2nd speed rpm : 250.0 Rack travel in mm: 7.9...8.1 Del.quantity cm3/: 1.8...2.2 100 s: (1.5...2.4) cm3 : 0.3Spread 100 s: (0.5) GUIDE SLEEVE POSITION Control-lever position Degree: -3 rpm : 800 Rack travel in mm : 0.30...0.70 Governor spring pre-tension Click setting x : 4.50 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 900 Del.quantity : 142.5...144.5 1000 : (140.5...146.5) : 3.50 Spread cm3 1000 : (6.00) RATED SPEED 1st version Control lever position degrees: 44...52

Testing: 1st rack travel in: 12.00 Speed rpm : 915...925 2nd rack travel in: 4.00 rpm : 945...975 Speed

3rd rack travel in: 4.00 rpm : 955...985 Speed 4th rack travel in: 1150 Speed rpm : 0.30...1.40 LOW IDLE 1 Control Lever position degrees: 19...27 Setting point w/out bumper spring Speed rpm : 250 Rack travel in mm : 5.5 Testina: Speed rpm : 100 Minimum rack trave: 19.50 Speed rpm : 250 Rack travel in mm : 9.40...6.10 Rack travel in mm : 2.00 rpm : 340...400 Speed TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 900 Rack travel in m: 13.20...13.30 rpm : 450 2nd speed Rack travel in m: 13.20...13.30 3rd speed rpm : 250 Rack travel in m: 14.40...15.00 BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 12.00 rpm : 915...925 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 260.0...280.0 1000 s: (256.0...284.0) Rack travel in mm : 19.00...21.00 LOW IDLE Speed rpm : 250 Rack travel in mm : 5.90...6.10 Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : ENA 11,9 g1 Edition : 17.02.89 Replaces Test oil : ISO-4113 Combination no. : 0 401 876 333A Injection pump Pump designation : PE6P12OA32ORS257 EP type number : 0 411 826 075 Governor Governor design. : RSV250...1100P0A533 Governer no. : 0 421 833 274 Customer-spec. information Customer : ENASA

: 96 T1AO Engine

: 240.0 1st version kW : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27 Prestroke mm : 2.80...2.90 : (2.75...2.95) Rack travel in mm : 9.00...12.00 Firing order : 1-5- 3- 6- 2- 4

Phasina : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 11.80...11.90

Del.quantity cm3/: 22.9...23.1

100 s: (22.6...23.4)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 250.02nd speed Rack travel in mm : 5.7...5.9 Del.quantity cm3/ : 1.7...2.3 100 s: (1.4...2.6)

cm3 : 0.8 100 s: (1.2) Spread

GUIDE SLEEVE POSITION Control-lever position Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 229.0...231.0 1000 : (226.0...234.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 41...49

Testing:

1st rack travel in: 10.80

rpm : 1115...1120 Speed 2nd rack travel in: 4.00 Speed rpm : 1160...1190 3rd rack travel in: 4.00 rpm : 1170...1200 Speed 4th rack travel in: 1350 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 17...25 Setting point w/out bumper spring Speed rpm : 250 Rack travel in mm : 5.3 Testing: Speed rpm : 100 Minimum rack trave: 19.50 Speed rpm : 250
Rack travel in mm : 5.70...5.90
Rack travel in mm : 2.00 : 350...410 Speed mon TORQUE CONTROL Torque control curve - 1st version rpm : 1100 1st speed Rack travel in m: 11.80...11.90 rpm : 450 2nd speed Rack travel in m: 11.80...11.90 3rd speed rpm : 250 Rack travel in m: 13.00...13.60 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.80 rpm : 1115...1120 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 140.0...160.0 1000 s: (136.0...164.0) Rack travel in mm : 19.50...21.00 Remarks: APPLICATION Special-purpose vehicle

Note remarks

Test sheet : ENA 11,9 g2 Edition : 17.02.89

Replaces

Test oil : ISO-4113

Combination no. : 0 401 876 333B

Injection pump

Pump designation : PE6P120A320RS257 EP type number : 0 411 826 075

Governor

Governor design. : RSV250...1100P0A533

Governer no. : 0 421 833 274

Customer-spec. information Customer : ENASA

Engine : 96 T1A0

: 228.0 1st version kW : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 11.60...11.70

Del.quantity cm3/: 22.3...22.5

100 s: (22.0...22.8)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 250.0 Rack travel in mm : 5.7...5.9 Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

cm3 : 0.8 Spread

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Speed Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity 223.0...225.0 1000 : (220.0...228.0)

: 5.00 Spread cm3

: (9.00) 1000

RATED SPEED

1st version Control lever

position degrees: 41...49

Testina:

1st rack travel in: 10.60

rpm : 1110...1115 Speed 2nd rack travel in: 4.00 rpm : 1150...1180 Speed 3rd rack travel in: 4.00 rpm : 1160...1190 Speed 4th rack travel in: 1350 Speed rpm : 0.30...1.40LOW IDLE 1 Control lever position degrees: 17...25 Setting point w/out bumper spring Speed rpm : 250 Rack travel in mm : 5.3 Testing: Speed rpm : 100 Minimum rack trave: 19.50 rpm : 250 Rack travel in mm: 5.70...5.90
Rack travel in mm: 2.00
Speed rpm: 350...410 TORQUE CONTROL Dimension a mm : 2.30 Torque control curve - 1st version rpm : 1100 1st speed Rack travel in m: 11.60...11.70 rpm : 450 2nd speed Rack travel in m: 11.60...11.70 3rd speed rpm : 250 Rack travel in m: 12.80...13.40 BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.60 rpm : 1110...1115 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0) Rack travel in mm : 19.50...21.00 Remarks: APPLICATION Special-purpose vehicle

Note remarks

: ENA 11,9 g3 Test sheet Edition : 17.02.89

Replaces

Test oil : ISO-4113

Combination no. : 0 401 876 333c

Injection pump

Pump designation : PE6P120A320RS257 EP type number : 0 411 826 075

Governor

Governor design. : RSV250...1100P0A533

: 0 421 833 274 Governer no.

Customer-spec. information Customer : ENASA

Engine : 96 T1A0

: 209.0 1st version kW Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90 (2.75...2.95)

Rack travel in mm : 9.00...12.00 : 1-5- 3- 6- 2- 4 Firing order

Phasina : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 900 1st speed

Rack travel in mm : 12.20...12.30

Del.quantity cm3/: 23.7...23.9

100 s: (23.4...24.2)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 250.0 2nd speed Rack travel in mm: 5.7...5.9 Del.quantity cm3/: 1.7...2.3 100 s: (1.4...2.6)

cm3 : 0.8 100 s: (1.2) Spread

GUIDE SLEEVE POSITION Control-lever position Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Del.quantity : 237.0...242.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 36...44

Testing:

1st rack travel in: 11.20

K15

: 905...910 Speed rpm 2nd rack travel in: 4.00 rpm : 960...990 Speed 3rd rack travel in: 4.00 rpm : 970...1000 Speed 4th rack travel in: 1150 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 17...25 Setting point w/out bumper spring Speed rpm : 250 Rack travel in mm : 5.3 Testing: Speed rpm : 100 Minimum rack trave: 19.50 rpm : 250 Rack travel in mm : 5.70...5.90 Rack travel in mm : 2.00 rpm : 350...410 Speed TORQUE CONTROL Dimension a mm : 2.30 Torque control curve - 1st version rpm : 900 1st speed Rack travel in m: 12.20...12.30 Znd speed rpm : 450 Rack travel in m: 12.20...12.30 3rd speed rpm : 290 Rack travel in m: 13.40...14.00 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.20 Speed rpm : 905...910 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0) Rack travel in mm: 19.50...21.00 Remarks: APPLICATION Special-purpose vehicle

Note remarks

: ENA 11,9 g4 Test sheet 17.02.89 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 401 876 333b

Injection pump

Pump designation : PE6P120A320RS257 : 0 411 826 075 EP type number

Governor

Governor design. : RSV250...1100P0A533

: 0 421 833 274 Governer no.

Customer-spec. information Customer : ENASA

Engine : 96 T1AO

: 195.0 1st version kW Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening .

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm : (2.75...2.95)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 750 1st speed

Rack travel in mm: 12.50...12.60

Del.quantity cm3/: 23.7...23.9

100 s: (23.4...24.2)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 250.0 Rack travel in mm : 5.7...5.9 Del.quantity cm3/ : 1.7...2.3 100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 750 Speed

Del.quantity : 237.0...242.0)

: 5.00 Cm3 Spread

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 32...40

Testing:

1st rack travel in: 11.50

Speed : 755...760 rpm 2nd rack travel in: 4.00 rpm : 820...850 Speed 3rd rack travel in: 4.00 rpm : 830...860 Speed 4th rack travel in: 1000 rpm : 0.30...1.40Speed LOW IDLE 1 Control lever position degrees: 17...25 Setting point w/out bumper spring rpm : 250

Testing:

Speed rpm : 100
Minimum rack trave: 19.50
Speed rpm : 250
Rack travel in mm : 5.70...5.90
Rack travel in mm : 2.00
Speed rpm : 350...410

Rack travel in mm: 5.3

TORQUE CONTROL

Torque control curve - 1st version 1st speed rpm : 750 Rack travel in m: 12.50...12.60 2nd speed rpm : 450

Rack travel in m: 12.50...12.60 3rd speed rpm : 300 Rack travel in m: 13.70...14.30

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.50 Speed rpm : 755...760

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 140.0...160.0 1000 s: (136.0...164.0) Rack travel in mm : 19.50...21.00

Remarks:

APPLICATION

Special-purpose vehicle

Note remarks

Test sheet : ENA 11,9 g5 Edition : 17.02.89

Replaces

Test oil : ISO-4113

Combination no. : 0 401 876 333E

Injection pump

Pump designation : PE6P120A320RS257 EP type number : 0 411 826 075

Governor

Governor design. : RSV250...1100P0A533

Governer no. : 0 421 833 274

Customer-spec. information Customer : ENASA

Engine : 96 T1AD

: 220.0 1st version kW : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order

Phasina : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 11.70...11.80

Del.quantity cm3/: 22.3...22.5

100 s: (22.0...22.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0 Rack travel in mm : 5.7...5.9 Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

cm3 : 0.8Spread 100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Dearee: -3

Speed rpm: 800 Rack travel in mm: 0.30...0.70

Governor spring pre-tension Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del.quantity : 223.0...225.0 1000 : (220.0...228.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 37...45

Testina:

1st rack travel in: 10.70

rpm : 1010...1015 Speed 2nd rack travel in: 4.00 rpm : 1050...1080 Speed 3rd rack travel in: 4.00 Speed rpm : 1060...1090 4th rack travel in: 1250 rpm : 0.30...1.40Speed LOW IDLE 1 Control lever position degrees: 17...25 Setting point w/out bumper spring Speed rpm : 250 Rack travel in mm : 5.3 Testing: Speed rpm : 100 Minimum rack trave: 19.50 Speed rpm : 250
Rack travel in mm : 5.70...5.90
Rack travel in mm : 2.00
Speed rpm : 350...410 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 11.70...11.80 2nd speed rpm : 450 Rack travel in m: 11.70...11.80 3rd speed rpm : 250 Rack travel in m: 12.90...13.50 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.70 rpm : 1010...1015 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0) Rack travel in mm : 19.50...21.00 Remarks:

Note remarks

Test sheet : ENA 11,9 g6 Edition : 17.02.89

Replaces

Test oil : ISO-4113

Combination no. : 0 401 876 333F

Injection pump

Pump designation : PE6P120A320RS257 EP type number : 0 411 826 075

Governor

Governor design. : RSV250...1100P0A533

Governer no.

: 0 421 833 274

Customer-spec. information Customer : ENASA

Engine : 96 T1AD

: 221.0 1st version kW : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Opening .

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 : (2.75...2.95) Prestroke mm

Rack travel in mm : 9.00...12.00

: 1-5- 3- 6- 2- 4 Firing order

Phasina : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 11.20...11.30

Del.quantity cm3/: 21.2...21.4

100 s: (20.9...21.7)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 250.0 2nd speed

Rack travel in mm : 5.7...5.9 Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

cm3 : 0.8Spread 100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

: 212.0...214.0 Del.quantity

1000 : (209.0...217.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 37...45

Testina:

1st rack travel in: 10.20

rpm : 1010...1020 Speed 2nd rack travel in: 4.00 rpm : 1050...1060 Speed 3rd rack travel in: 4.00 rpm : 1060...1090 Speed 4th rack travel in: 1250 Speed rpm : 0.30...1.40LOW IDLE 1 Control lever position degrees: 17...25 Setting point w/out bumper spring Speed rpm : 250 Rack travel in mm : 5.3 Testing: rpm : 100 Speed Minimum rack trave: 19.50 Speed rpm : 250
Rack travel in mm : 5.70...5.90
Rack travel in mm : 2.00 : 350...410 Speed rpm TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 11.20...11.30 2nd speed rpm : 450 Rack travel in m: 11.20...11.30 3rd speed rpm : 250 Rack travel in m: 12.40...13.00 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.20 rpm : 1010...1020 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 140.0...160.0 1000 s: (136.0...164.0) Rack travel in mm : 19.50...21.00 Remarks: APPLICATION Special-purpose vehicle

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : PEN 12,2 b 31.03.89 9.12.88 Edition Replaces Test oil : ISO-4113 Combination no. : 0 401 876 761 Injection pump Pump designation : PE6P120A320RS3206 EP type number : 0 411 826 773 Governor Governor design. : RSV250...900P4A374-6 : 0 421 833 283 Governer no. Customer-spec. information Customer : VOLVO-PENTA Engine : TAMD122 A 1st version kW : 280.0 Rated speed : 1800 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder assembly : 1 688 901 019 Opening | : 207...210 pressure, bar Orifice plate diameter mm : 0,8 Test Lines : 1 680 750 067 Outside diameter x Wall thickness

: 6.00x1.50x1000

(A) Injection pump setting values

Set equal delivery quant.

Insp. values in parentheses

: (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1-5- 3- 6- 2- 4 Phasing : 0-60-120-180-240-300 Tolerance + - 0 : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 700 Rack travel in mm : 11.70...11.80 Del.quantity cm3/: 27.5...27.7 100 s: (27.2...28.0) Spread cm3 : 0.5100 s: (0.9) 2nd speed rpm : 250.0 Rack travel in mm : 5.0...5.2 Del.quantity cm3/ : 1.7...2.3 100 s: (1.4...2.6) cm3 : 0.5Spread 100 s: (0.7) GUIDE SLEEVE POSITION Control-lever position Degree: -3 Speed rpm: 800 Rack travel in mm: 0.30...1.40 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 700 Aneroid pressure h: 900 Del.quantity : 2/3.3...280.5) : 5.00 cm3 : (9.00) 1000 RATED SPEED 1st version Control lever position degrees: 50...58 Testing: 1st rack travel in: 10.70 Speed rpm : 925...935 2nd rack travel in: 4.00

: 3.50...3.60

Prestroke mm

x Length mm

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

rpm : 985...1015 Speed 3rd rack travel in: 4.00 rpm : 995...1025 Speed 4th rack travel in: 1130 Speed rpm : 0.30...1.40

LOW IDLE 1 Control Lever

position degrees: 18...26 Setting point w/out bumper spring

rpm : 250 Speed

Rack travel in mm: 4.6
Speed rpm: 250
Rack travel in mm: 5.00...5.20
Rack travel in mm: 2.00

: 380...440 Speed rom

Aneroid/Altitude Compensator Test

1st version Setting

Speed : 700 rpm Pressure hPa : 900

Rack travel mm : 11.70...11.80

Measurement

1/min: 700 Speed

1st pressure hPa : -

Rack travel in m: 8.60...8.80

2nd pressure hPa : 240

Rack travel in m: 8.90...9.00

3rd pressure hPa : 770

Rack travel in m: 11.30...11.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: rpm_ : 700 Speed

Del.quantity cm3/: 177.0...179.0 1000 s: (174.0...182.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.70 rpm : 925...935 Speed

STARTING FUEL DELIVERY

Speed

Del.quantity cm3/: 260.0...280.0 1000 s: (250.0...290.0)

LOW IDLE

Speed rpm : 250
Rack travel in mm : 5.00...5.20
Del.quantity cm3/: 17.0...23.0
1000 s: (14.0...26.0)
Spread cm3 : 5.00

1000 s: (7.00)

Remarks:

Delivery-valve spring pre-tension =

2.40...2.60 mm.

Permissible alteration from 2.20...2.90

rom : 100

BOSCH INJ. PUMP TEST SPECIFICATIONS : 3.50...3.60 : (3.45...3.65) Prestroke mm Rack travel in mm : 9.00...12.00 Note remarks : 1-5-3-6-2-4 Firing order Test sheet : PEN 12,2 b1 Edition : 11.11.88 Replaces Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 401 876 761A Tolerance + - 0 : 0.50 (0.75) Injection pump Time to cyl. no. : 1 Pump designation : PE6P12OA32ORS32O6 EP type number : 0 411 826 773 BASIC SETTING Governor Governor design. : RSV250...900P4A374-6 1st speed rom : 700 Governer no. : 0 421 833 283 Rack travel in mm : 12.10...12.20 Customer-spec, information Customer : VOLVO-PENTA Del.quantity cm3/: 29.0...29.2 Engine : TAMD122 A 100 s: (28.7...29.5) : 280.0 1st version kW Spread cm3 : 0.5Rated speed : 1800 100 s: (0.9) TEST BENCH REQUIREMENTS 2nd speed rpm : 250.0 Rack travel in mm : 5.0...5.2 Del.quantity cm3/ : 1.7...2.3 Test oil inlet temp. °C : 38...42 100 s: (1.4...2.6) Overflow valve cm3 : 0.5 Spread : 1 417 413 025 100 s: (0.7) Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Control-lever position Test nozzle holder Degree: -3 assembly : 1 688 901 019 rpm : 800 Speed Rack travel in mm : 0.30...1.40 Opening | pressure, bar : 207...210 FULL LOAD DELIV. AT FULL LOAD STOP Orifice plate 1st version diameter mm : 0,8 Speed rpm : 700 Aneroid pressure h: 1200 Deliquantity : 290.5...295.5) Test lines : 1 680 750 067 : 5.00 Spread cm3 Outside diameter 1000 : (9.00) x Wall thickness x Length mm : 6.00X1.50X1000 RATED SPEED

> 1st version Control lever

position degrees: 54...62

Testing:

1st rack travel in: 11.10

Speed rpm : 1020...1030

2nd rack travel in: 4.00

K25

(A) Injection pump setting values

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Insp. values in parentheses

Speed rpm : 1080...1110 3rd rack travel in: 4.00 rpm : 1090...1120 Speed 4th rack travel in: 1160 Speed rpm : 0.30...1.40

LOW IDLE 1 Control lever

position degrees: 18...26 Setting point w/out bumper spring

Speed rpm : 250 Rack travel in mm : 4.6 : 250 Speed r pm

Rack travel in mm : 4.50...4.70

Rack travel in mm : 2.00 rpm : 380...440 Speed

Aneroid/Altitude

Compensator Test

1st version Setting

Speed rpm : 700 hPa : 1200 Pressure

Rack travel mm : 12.10...12.20

Measurement

1/min: 700 Speed

1st pressure hPa : -

Rack travel in m: 8.60...8.80

2nd pressure hPa : 360

Rack travel in m: 8.90...9.00

3rd pressure hPa : 1030

Rack travel in m: 11.70...12.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: rpm : 700 Speed

Del.quantity cm3/: 177.0...179.0 1000 s: (174.0...182.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.10

Speed rpm : 1020...1030

STARTING FUEL DELIVERY

Speed npm : 100 Del.quantity cm3/: 290.0...310.0 1000 s: (280.0...320.0)

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm.
Permissible alteration from 2.20...2.90

K26

Note remarks

Test sheet : PEN 7,1 c 2 Edition : 07.02.89

Replaces

Test oil : ISO-4113

Combination no. : 0 401 876 768

Injection pump

Pump designation : PE6P110A320RS3147 EP type number : 0 411 816 743

Governor

Governor design. : RSV650...750P4A421-6

Governer no. : 0 421 833 309

Customer-spec. information

Customer : VOLVO-PENTA

Engine : TID 71AG

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening |

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.50...3.60 Prestroke mm

: (3.45...3.65)

Rack travel in mm: 9.00...12.00

Firing order: 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 11.50...11.60

Del.quantity cm3/: 16.4...16.6

100 s: (16.1...16.9)

cm3 : 0.4Spread

100 s: (0.7)

rpm : 650.02nd speed Rack travel in mm: 4.0...4.2 Del.quantity cm3/: 1.7...2.1

100 s: (1.4...2.3)

cm3 : 0.3Spread

100 s: (0.6)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Speed Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 164.0...166.0 1000 : (161.0...169.0)

cm3 Spread : 4.00

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 37...45

Testina:

1st rack travel in: 10.50

rpm : 747...752 Speed

2nd rack travel in: 4.00

: 777...790 Speed rpm

4th re travel in: 930

: 0.30...1.40 Speea rom

LOW IDLE 1 Control lever position degrees: 31...39 Setting point w/out bumper spring Speed rpm : 650 Rack travel in mm: 4.1 Speed rpm : 650
Rack travel in mm : 4.00...4.20
Rack travel in mm : 2.00 Speed rpm : 630...690 SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.50 rpm : 747...752 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 150.0...180.0 1000 s: (146.0...184.0) Rack travel in mm : 20.00...21.00 LOW IDLE Speed rpm : 650 Rack travel in mm : 4.00...4.20 Del.quantity cm3/: 17.0...21.0 1000 s: (14.5...23.5) Spread cm3 : 3.00 1000 s: (6.00) Remarks: Delivery—valve spring pre-tension = 2.40...2.60 mm. Permissible alteration from 2.20...2.90

Note remarks

: MB 14,7 h : 07.02.89 Test sheet Edition : 26.6.87 Replaces : ISO-4113 Test oil

Combination no. : 0 401 878 710

Injection pump

Pump designation: PE8P110A320LS3845 : 0 411 818 715 EP type number

Governor

Governor design. : RSV350...750P0A824-1

Governer no. : 0 421 833 270

Customer-spec. information

Customer : DAIMLER-BENZ

: 0M442 Engine

1st version kW : 163.0 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10

: (3.95...4.15)

Rack travel in mm : 9.00...12.00

Firing order : 8-7-2-6-3-5-

Phasina : 0-45-90-135-180-225-

Phasing : 270-315

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 13.90...14.00

Del.quantity cm3/: 14.8...15.0

100 s: (14.5...15.2)

Spread cm3 : 0.4

100 s: (0.8)

rpm : 350.0 2nd speed

Rack travel in mm: 7.9...8.2 Del.quantity cm3/:1.4...1.8

100 s: (1.1...2.0)

Spread cm3 : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 148.0...150.0

1000 : (145.5...152.5)

Spread : 4.00 Cm3

1000 : (8.00)

RATED SPEED

1st version

Control Lever

position degrees: 22...30

L01

Testing: 1st rack travel in: 12.90 Speed rpm : 750...755 2nd rack travel in: 4.00

Speed rpm: 780...793 4th rack travel in: 1000

Speed rpm : 0.30...1.40

LOW IDLE 1 Control lever

position degrees: 10...18 Setting point w/out bumper spring

Speed rpm : 350 Rack travel in mm : 7.1

Testing:

Speed rpm : 100 Minimum rack trave: 19.50 Speed rpm: 350 Rack travel in mm: 7.00...7.20

SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 150.0...170.0 1000 s: (146.0...174.0)

Remarks:

Observe VDT-I-420/120

APPLICATION

Generator

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MAN 10.0 a Edition : 07.04.89 Replaces : 5.8.88 Test oil : ISO-4113 Combination no. : 0 402 035 020 Injection pump Pump designation: PES5P120A720/3LS512 EP type number : 0 412 025 021 Governor Governor design. : RQ300/1100PA813-1 Governer no. -: 0 421 801 405 Customer spec. information Customer : MAN Engine : D2865LF 1st version kW : 191.0 Rated speed : 2200 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder assembly : 1 688 901 019 Opening pressure, bar : 207...210 Orifice plate diameter mm : 0,8 Test Lines : 1 680 750 067 Outside diameter x Wall thickness

: 6.00X1.50X1000

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

Prestroke mm : 3.50...3.60 : (3.45...3.65) Rack travel in mm : 9.00...12.00 : 1- 3- 5- 4- 2 Firing order Phasina : 0-72-144-216-288 Tolerance + - 0 : 0.50 (0.75) Time to cyl. no. : 5 BASIC SETTING 1st speed rom : 750 Rack travel in mm : 10.70...10.80 Del.quantity cm3/: 20.9...21.1 100 s: (20.6...21.4) Spread cm3 : 0.5100 s: (0.9) 2nd speed rpm : 300.0 Rack travel in mm : 3.9...4.1 Del.quantity cm3/ : 1.2...1.8 100 s: (0.9...2.1) Spread cm3 : 0.8100 s: (1.2) GUIDE SLEEVE POSITION Control-lever position Degree: -2 Speed rpm : 600 Rack travel in mm : 19.20...20.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 750 Aneroid pressure h: 1000 Del.quantity : 209.0...214.0) : 5.00 1000 RATED SPEED 1st version Setting point: rpm Rack travel in mm : 20.0

Testina:

1st rack travel in: 9.10

x Length mm

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Speed rpm : 1145...1160 2nd rack travel in: 4.00 rpm : 1180...1210 Speed 4th rack travel in: 1300 rpm : 0.00...1.00 Speed LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm: 4.0 Testina: Speed rpm : 100 Minimum rack trave: 5.50 Speed rpm : 300 Rack travel in mm : 3.90...4.10 Rack travel in mm : 2.00 Speed rpm : 320...380 TORQUE CONTROL Dimension a mm : 0.30 Torque control curve - 1st version 1st speed rpm : 1100 Rack travel in m: 10.20...10.30 2nd speed rpm : 750 Rack travel in m: 11.00...11.20 3rd speed rpm : 920 Rack travel in m: 10.60...10.80 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm Pressure hPa : 1000 Rack travel mm : 10.70...10.80 Measurement 1/min: 500 Speed 1st pressure hPa : Rack travel in m: 7.70...7.90
2nd pressure hPa : 125
Rack travel in m: 8.10...8.20 3rd pressure hPa : 430 Rack travel in m: 10.20...10.50 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000

rpm : 1100

Del.quantity cm3/: 198.0...202.0 1000 s: (195.0...205.0) Aneroid pressure h: 1000 Speed rpm : 650 Del.quantity cm3/: 200.0...206.0 1000 s: (197.0...209.0) Aneroid pressure h: -Speed rpm: 500
Del.quantity cm3/: 125.0...127.0
1000 s: (122.0...130.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 9.10 Speed rpm : 1145...1160 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 190.0...210.0 1000 s: (186.0...214.0) LOW IDLE

Speed rpm : 300 Rack travel in mm : 3.90...4.10 Del.quantity cm3/ : 12.0...18.0 1000 s: (9.0...21.0)

Spread cm3 : 8.001000 s: (12.00)

Remarks:

: MAN-NR. 2-7881

Speed

Note remarks Test sheet

Edition

: MAN 10.0 b : 07.04.89 : 5.8.88

Replaces Test oil

: ISO-4113

Combination no.

: 0 402 035 021

Injection pump

EP type number

Pump designation : PES5P120A720/3LS512

Governor

: 0 412 025 021

Governor design. : RQV300...1100PA876 Governer no.

: 0 421 813 661

Customer-spec. information Customer : MAN

Engine

: D2865LF

1st version kW Rated speed

: 191.0 : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 1 688 901 019

Opening.

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60

: (3.45...3.65) Rack travel in mm : 9.00...12.00 : 1-3-5-4-2 Firing order

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 5

BASIC SETTING

Phasing

1st speed rpm: 750

Rack travel in mm : 10.70...10.80

Del.quantity cm3/: 20.9...21.1

100 s: (20.6...21.4)

: 0-72-144-216-288

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 3.9...4.1 Del.quantity cm3/ : 1.2...1.8 100 s: (0.9...2.1) Spread cm3 : 0.8 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm: 300

travel mm : 1.70...2.00

rpm : 850 2nd speed

: 6.00...6.20 travel mm 3rd speed rpm : 1100

travel mm : 8.10...8.30

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1130

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Speed rpm : 750 Aneroid pressure h: 1000

: 209.0...211.0 Del.quantity 1000 : (206.0...214.0)

: 5.00 Spread cm3

: (9.00) 1000

RATED SPEED

1st version Control Lever

position degrees: 47...55

Testing:

1st rack travel in: 9.20 Speed rpm : 1140...1150 2nd rack travel in: 4.00

Speed rpm : 1215...1245

4th rack travel in: 1350

Speed rom : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 16...24

Testina:

Speed rest: 100 Minimum rack trave: 5.50 rpm : 300

Rack travel in mm : 3.90...4.10

CONSTANT REGULATION

rpm : 310...410 Speed

TORQUE CONTROL

Dimension a mm : 0.50

Torque control curve - 1st version 1st speed rpm : 750

Rack travel in m: 10.70...10.80

2nd speed rpm : 1100 Rack travel in m: 10.20...10.30

3rd speed rpm : 900

Rack travel in m: 10.60...10.70

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed : 500 rom hPa : 1000 Pressure

Rack travel mm : 10.70...10.80

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 7.70...7.90

2nd pressure hPa : 125

Rack travel in m: 8.10...8.20

3rd pressure hPa : 430

Rack travel in m: 10.20...10.50

START CUT-OUT

1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

Speed rpm : 1100 Del.quantity cm3/: 199.0...201.0

1000 s: (196.0...204.0)

Aneroid pressure h: 1000

Speed rpm : 650 Del.quantity cm3/ : 200.0...206.0 1000 s: (197.0...209.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 125.0...127.0 1000 s: (122.0...130.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.20

rom : 1140...1150 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 190.0...210.0

1000 s: (186.0...214.0)

LOW IDLE

Speed rpm : 300 Rack travel in mm : 3.90...4.10 Del.quantity cm3/ : 12.0...18.0

1000 s: (9.0...21.0)

Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

: MAN-NR. 2-7882

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MAN 11,9a13 : 31.07.87 Test sheet Edition : 12.9.86 Replaces Test oil : ISO-4113 Combination no. : 0 402 036 044 Injection pump Pump designation: PES6P120A720/3LS470-EP type number : 0 412 026 050 Governor Governor design. : RQ300/1100PA658-19 Governer no. : 0 421 801 323 Customer-spec. information Customer : MAN Engine : D2866LFZ/330 1st version kW : 243.0 : 2200 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 019 assembly Openina : 207...210 pressure, bar Orifice plate diameter mm : 0,8 Test Lines : 1 680 750 067 Outside diameter x Wall thickness x Length mm : 6.00X1.50X1000

(A) Injection pump setting values

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Insp. values in parentheses Set equal delivery quant.

Prestroke mm : 2.80...2.90 : (2.75...2.95)
Rack travel in mm : 9.00...12.00 : 6-2-4-1-5-3 Firing order Phasing : 0-60-120-180-240-300 Tolerance $+ - \circ : 0.50 (0.75)$ Time to cyl. no. : 6 BASIC SETTING 1st speed rpm : 750 Rack travel in mm: 11.30...11.40 Del.quantity cm3/: 20.7...20.9 100 s: (20.4...21.2) Spread cm3 : 0.5100 s: (0.9) rpm : 300.0 2nd speed Rack travel in mm : 4.6...4.8 Del.quantity cm3/ : 1.2...1.8 100 s: (0.9...2.1) cm3 : 0.8 Spread 100 s: (1.2) GUIDE SLEEVE POSITION Control-lever position Degree: -2 rpm : 600 Rack travel in mm : 19.20...20.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 750 Aneroid pressure h: 1000 Del.quantity : 207.0...209.0 1000 : (204.0...212.0) : 5.00 : (9.00) Spread cm3 1000 RATED SPEED 1st version Setting point: rom Rack travel in mm : 20.0 Testing:

1st rack travel in: 9.50 Aneroid pressure h: 1000 rpm : 1145...1160 Speed Speed : 1100 rpm 2nd rack travel in: 4.00 Del.quantity cm3/: 203.0...207.0 1000 s: (200.0...210.0) Speed rpm : 1185...1215 4th rack travel in: 1300 Aneroid pressure h: 1000 Speed rpm : 0.00...1.00Speed : 650 rpm Del.quantity cm3/: 208.0...214.0 1000 s: (205.0...217.0) LOW IDLE 1 Setting point w/out bumper spring Aneroid pressure h: 280 Speed rpm : 300 Rack travel in mm : 4.7 Speed rpm : 500 Del.quantity cm3/ : 184.0...196.0 1000 s: (181.0...199.0) Testing: Aneroid pressure h: -Speed rpm : 100 Minimum rack trave: 6.20 Speed rpm : 500 Del.quantity cm3/: 132.0...134.0 Speed rpm : 300 1000 s: (129.0...137.0) Rack travel in mm : 4.60...4.80 Rack travel in mm: 2.00 Speed : 340...380 rom **BREAKAWAY** TORQUE CONTROL 1st version Dimension a mm : 0.50 1mm rack travel less than Torque control curve - 1st version 1st speed rpm : 1100 Rack travel in m: 11.70...11.80 full load rack tr: 9.50 rpm : 1145...1160 Speed 2nd speed rpm : 750 Rack travel in m: 11.90...12.20 STARTING FUEL DELIVERY 3rd speed rpm : 875 Rack travel in m: 11.80...12.00 4th speed rpm : 950 Speed rpm : 100 Del.quantity cm3/ : 225.0...245.0 1000 s: (221.0...249.0) Rack travel in m: 11.20...11.50 Aneroid/Altitude Compensator Test LOW IDLE Speed rpm : 300 1st version Rack travel in mm : 4.60...4.80 Setting Del.quantity cm3/: 12.0...18.0 Speed 1000 s: (9.0...21.0) rpm : 500 hPa : 1000 Pressure Spread cm3 : 8.00 Rack travel mm : 11.30...11.40 1000 s: (12.00) Measurement Remarks: Speed 1/min: 500 : MAN-NR. 2-7712 1st pressure hPa : -Rack travel in m: 8.90...9.10 2nd pressure hPa : 85 Rack travel in m: 9.30...9.40 3rd pressure hPa : 280 Rack travel in m: 10.50...10.90 START CUT-OUT Speed 1/min : 220 (240) FUEL DELIVERY CHARACTERISTICS 1st version

L08

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9a22 : 11.12.87 Edition Replaces : 18.8.87 Test oil : ISO-4113

Combination no. : 0 402 036 061

Injection pump

Pump designation: PES6P120A720/3LS470-

: 0 412 026 050 EP type number

Governor

Governor design. : RQV300...1100PA700-2

Governer no. : 0 421 813 543

Customer-spec. information Customer : MAN

Engine : D2866LF/290

1st version kW : 213.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening |

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY Test pressure, bar: 30...32 Prestroke mm : 2.80...2.90

: (2.75...2.95) Rack travel in mm : 9.00...12.00

: 6-2-4-1-5-3 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 750

Rack travel in mm : 10.30...10.40

Del.quantity cm3/: 18.3...18.5

100 s: (18.0...18.8)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.0 2nd speed Rack travel in mm : 4.8...5.0 Del.quantity cm3/ : 1.2...1.8

100 s: (0.9...2.1)

cm3 : 0.8 Spread

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

: 1.50...1.70 rpm : 850 : 5.70...6.00 rpm : 1100 travel mm

2nd speed

travel mm

3rd speed

travel mm : 8.00...8.20

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1130 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750 Aneroid pressure h: 1000

Del.quantity : 183.0...188.0)

Spread cm3 : 5.00 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 62...70 Testing: 1st rack travel in: 8.70 Speed rpm: 1140...1150 2nd rack travel in: 4.00 rpm : 1205...1235 Speed 4th rack travel in: 1350 Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 7...15 Testing: Speed : 100 rpm Minimum rack trave: 6.40 : 300 Speed rom Rack travel in mm : 4.80...5.00 Rack travel in mm : 2.00 Speed : 375...435 rpm TORQUE CONTROL Dimension a mm : 0.65 Torque control curve - 1st version 1st speed rpm : 750 Rack travel in m: 10.30...10.40 2nd speed rpm : 1100 Rack travel in m: 9.70...9.80 3rd speed rpm : 850 Rack travel in m: 10.20...10.30 4th speed rpm : 925 Rack travel in m: 9.90...10.10 Aneroid/Altitude Compensator Test

1st version Setting Speed : 500 rpm Pressure hPa : 1000 Rack travel mm : 10.30...10.40

Measurement Speed 1/min: 500 1st pressure hPa : -Rack travel in m: 8.90...9.10 2nd pressure hPa : 85 Rack travel in m: 9.30...9.40 3rd pressure hPa : 160

Rack travel in m: 9.80...10.20

START CUT-OUT

1/min : 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 1000 Speed rpm : 1100 Del.quantity cm3/ : 173.0...177.0

1000 s: (170.0...180.0)

Aneroid pressure h: 1000 Speed rpm : 650

Del.quantity cm3/: 174.0...180.0 1000 s: (171.0...183.0) Aneroid pressure h: 160 Speed rpm : 500 Del.quantity cm3/: 157.0...169.0 1000 s: (154.0...172.0)

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 132.0...134.0 1000 s: (129.0...137.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8.70

Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 225.0...245.0 1000 s: (221.0...249.0)

LOW IDLE

rpm : 300 Speed

Rack travel in mm : 4.80...5.00 Del.quantity cm3/: 12.0...18.0 1000 s: (9.0...21.0)

cm3 : 8.00

1000 s: (12.00)

Remarks:

Spread

: MAN-NR. 2-7761

BOSCH INJ. PUMP TEST SPECIFICATIONS Rack travel in mm : 9.00...12.00 Firing order : 6-2-4-1-5-3 Note remarks Test sheet : MAN 11.9 q6 Edition : 30.09.88 Phasina : 0-60-120-180-240-300 : 11.12.87 Replaces Test oil Tolerance + - ° : ISO-4113 : 0.50 (0.75) Combination no. : 0 402 036 064 Time to cyl. no. : 6 Injection bump BASIC SETTING Pump designation: PES6P110A720/3LS477-1st speed rpm: 800 EP type number : 0 412 016 071 Governor Rack travel in mm : 10.50...10.60 Governor design. : RQ250/1100PA817-1 : 0 421 801 362 Governer no. Del.quantity cm3/: 9.1...9.4 Customer-spec. information 100 s: (8.8...9.6) Customer : MAN Spread cm3 : 0.4Engine : D2566UH/205 100 s: (0.7) : 150.0 1st version kW : 2200 Rated speed rpm : 250.0 2nd speed Rack travel in mm: 6.1...6.3 TEST BENCH REQUIREMENTS Del.quantity cm3/: 1.5...2.0 100 s: (1.2...2.2) Test oil cm3 : 0.4Spread inlet temp. °C 100 s: (0.7) : 38...42 Overflow valve GUIDE SLEEVE POSITION : 1 417 413 025 Control-lever position Degree: -2 Inlet press., bar: 1.50 Speed rpm : 600 Rack travel in mm : 19.20...20.80 Test nozzle holder : 0 681 343 009 assembly FULL LOAD DELIV. AT FULL LOAD STOP Opening . 1st version : 172...175 pressure, bar Speed : 800 rpm Del.quantity : 91.0...94.0 1000 : (88.5...96.5) Test lines : 1 680 750 015 Spread : 4.00 cm3 1000 : (7.50) Outside diameter x Wall thickness RATED SPEED x Length mm : 6.00X1.50X600 1st version (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. Setting point: Speed rpm per values Rack travel in mm : 20.0 BEGINNING OF DELIVERY Testing:

1st rack travel in: 9.50

2nd rack travel in: 4.00

rpm : 1145...1160

rpm : 1215...1245

Speed

Speed

Prestroke mm

Test pressure, bar: 25...27

: 3.50...3.60

: (3.45...3.65)

4th rack travel in: 1300

Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 250 Rack travel in mm : 6.2

Testing:

rpm : 100 Speed Minimum rack trave: 7.70

Speed rpm: 250
Rack travel in mm: 6.10...6.30
Rack travel in mm: 2.00
Speed rpm: 330...370

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 10.50...10.60 2nd speed rpm : 500 Rack travel in m: 10.50...10.70

START CUT-OUT

Speed 1/min: 170 (190)

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 1100 Speed

Del.quantity cm3/: 101.0...109.0

1000 s: (98.0...112.0)

Speed rpm : 500
Del.quantity cm3/: 77.0...85.0
1000 s: (74.0...88.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.50

Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 110.0...130.0 1000 s: (106.0...134.0)

LOW IDLE

Speed rpm : 250 Rack travel in mm : 6.10...6.30

Del.quantity cm3/: 15.0...20.0

1000 s: (12.5...22.5) cm3 : 4.50 Spread

1000 s: (7.50)

Remarks:

: MAN-NR, 2-7768

APPLICATION

Omnibus

L12

BOSCH INJ. PUMP TEST SPECIFICATIONS : 2.80...2.90 : (2.75...2.95) Prestroke mm Note remarks Rack travel in mm : 9.00...12.00 Firing order : 6-2-4-1-5-3 : MAN 11,9a28 : 30.09.88 Test sheet Edition Replaces : 11.12.87 Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 402 036 069 Tolerance + - 0 : 0.50 (0.75) Injection pump Pump designation : PES6P120A720/3LS470-Time to cyl. no. : 6 EP type number : 0 412 026 051 BASIC SETTING Governor Governor design. : RQ300/1100PA679-2 rpm: 750 1st speed Governer no. : 0 421 801 402 Rack travel in mm : 10.60...10.70 Customer-spec. information Customer : MAN Del.quantity cm3/: 18.3...18.5 Engine : D2866LUL 100 s: (18.0...18.8) 1st version kW : 213.0 Spread cm3 : 0.5Rated speed : 2200 100 s: (0.9) TEST BENCH REQUIREMENTS 2nd speed rpm : 300.0 Rack travel in mm : 5.0...5.2 Test oil inlet temp. °C Del.quantity cm3/: 1.2...1.8 : 38...42 100 s: (0.9...2.1) Overflow valve Spread cm3 : 0.8: 1 417 413 025 100 s: (1.2) Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Control-lever position Test nozzle holder Degree: -2 assembly : 1 688 901 019 rpm : 600 Speed Rack travel in mm : 19.20...20.80 **Openina** pressure, bar : 207...210 FULL LOAD DELIV. AT FULL LOAD STOP Orifice plate 1st version diameter mm : 0,8 Speed rpm : 750 Aneroid pressure h: 1000 Del.quantity : 183.0...185.0 Test lines 1000 : (180.0...188.0) : 1 680 750 067 Spread cm3 : 5.00 Outside diameter 1000 : (9.00) x Wall thickness x Length mm : 6.00x1.50x1000 RATED SPEED (A) Injection pump setting values 1st version Insp. values in parentheses Set equal delivery quant. Setting point:

: 600

rpm Rack travel in mm: 20.0

Speed

Testina:

per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27

L13

1st rack travel in: 9.60 rpm : 1145...1160 Speed 2nd rack travel in: 4.00 Speed rpm : 1180...1210 4th rack travel in: 1350 rpm : 0.00...1.00 Speed LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 5.1 Testing: Speed rpm : 100 Minimum rack trave: 6.60 rpm : 300 Rack travel in mm: 5.00...5.20
Rack travel in mm: 2.00
Speed rpm: 345...385 TORQUE CONTROL Dimension a mm : 0.20 Torque control curve - 1st version 1st speed rpm : 1100 Rack travel in m: 10.60...10.70 2nd speed rpm : 750 Rack travel in m: 11.20...11.40 3rd speed rpm : 925 Rack travel in m: 10.70...11.00 Aneroid/Altitude Compensator Test 1st version Setting rpm : 500 Speed hPa : 1000 Pressure Rack travel mm : 10.60...10.70 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 8.80...9.00 2nd pressure hPa : 210 Rack travel in m: 9.10...9.20 3rd pressure hPa : 375 Rack travel in m: 9.90...10.20 START CUT-OUT 1/min: 190 (210) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000

Del.quantity cm3/: 190.0..196.0 1000 s: (187.0...199.0) Aneroid pressure h: 1000 Speed rpm: 650 Del.quantity cm3/: 174.0...180.0 1000 s: (171.0...183.0) Aneroid pressure h: -Speed rpm: 500 Del.quantity cm3/: 119.0...121.0 1000 s: (116.0...124.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.60 Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 225.0...245.0 1000 s: (221.0...249.0)

LOW IDLE

Speed rpm: 300
Rack travel in mm: 5.00...5.20
Del.quantity cm3/: 12.0...18.0
1000 s: (9.0...21.0)
Spread cm3: 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 2-7878

Speed

rpm : 1100

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 2.80...2.90 : (2.75...2.95)
Rack travel in mm : 9.00...12.00 Note remarks Test sheet : MAN 11,9a30 : 6-2-4-1-5-3 Firing order : 11.11.88 : 6.11.87 Edition Replaces Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 402 036 071 Tolerance + - 0 : 0.50 (0.75) Injection pump Pump designation: PES6P120A720/3LS470-Time to cyl. no. : 6 EP type number : 0 412 026 050 BASIC SETTING Governor Governor design. : RQ300/1100PA813-3 1st speed rpm: 750 Governer no. : 0 421 801 422 Rack travel in mm : 10.60...10.70 Customer-spec. information Customer Del.quantity cm3/: 19.1...19.3 Engine : D2866TOH 100 s: (18.8...19.6) 1st version kW : 213.0 cm3 : 0.5Spread Rated speed : 2200 100 s: (0.9) TEST BENCH REQUIREMENTS 2nd speed rpm : 300.0 Rack travel in mm : 4.7...4.9 Test oil inlet temp. °C : 38...42 Del.quantity cm3/: 1.2...1.8 100 s: (0.9...2.1) Overflow valve Spread $cm \le 0.8$: 1 417 413 025 100 3: (1.2) Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Control-lever position Test nozzle holder Degree: -2 rpm : 750 : 1 688 901 019 assembly Speed Rack travel in mm : 14.70...16.30 Opening | FULL LOAD DELIV. AT FULL LOAD STOP pressure, bar : 207...210 Orifice plate 1st version diameter mm : 0,8 Speed rpm : 750 Aneroid pressure h: 1000 Aneroiu p. Del.quantity 1000 : 191.0...193.0 Test lines : 1 680 750 067 : (188.0...196.0) : 5.00 Spread cm3 Outside diameter 1000 : (9.00) x Wall thickness : 6.00X1.50X1000 x Length mm RATED SPEED

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY Test pressure, bar: 30...32 1st version

Setting point:

Speed rpm : 750 Rack travel in mm : 15.5

Testing:

1st rack travel in: 9.30 Aneroid pressure h: 1000 rpm : 1145...1160 Speed Speed rpm : 1100 Del.quantity cm3/: 193.0...197.0 1000 s: (190.0...200.0) 2nd rack travel in: 4.00 rpm : 1180...1210 Speed 4th rack travel in: 1300 Aneroid pressure h: 1000 Speed rpm : 0.00...1.00Speed rom : 650 Del.quantity cm3/: 184.0...190.0 1000 s: (181.0...193.0) LOW IDLE 1 Setting point w/out bumper spring Aneroid pressure h: 20 Speed rpm: 500
Del.quantity cm3/: 168.0...180.0
1000 s: (165.0...183.0) rpm : 300 Rack travel in mm: 4.8 Testing: Aneroid pressure h: -Speed rpm : 100 rpm : 500 Speed Del.quantity cm3/: 119.0...121.0 1000 s: (116.0...124.0) Minimum rack trave: 6.30 Speed rpm : 300 Rack travel in mm : 4.70...4.90 Rack travel in mm : 2.00 Speed rpm : 385...425 BREAKAWAY TORQUE CONTROL 1st version Dimension a mm : 0.30 1mm rack travel less than Torque control curve - 1st version 1st speed rpm : 1100 full load rack tr: 9.30 Rack travel in m: 10.30...10.40 Speed rpm : 1145...1160 rpm : 750 2nd speed Rack travel in m: 11.00...11.20 STARTING FUEL DELIVERY 3rd speed rpm : 980 Rack travel in m: 10.90...11.10 4th speed rpm : 1030 Rack travel in m: 10.40...10.70 Speed rpm : 100 Del.quantity cm3/ : 225.0...245.0 1000 s: (221.0...249.0) Aneroid/Altitude Compensator Test LOW IDLE Speed rpm : 300 Rack travel in mm : 4.70...4.90 1st version Del.quantity cm3/: 12.0...18.0 1000 s: (9.0...21.0) Setting rom : 500 hPa : 1000 Speed rom Pressure Spread cm3 : 8.00Rack travel mm : 10.60...10.70 1000 s: (12.00) Measurement Remarks: Speed 1/min : 500 1st pressure hPa : -**APPLICATION** Rack travel in m: 8.50...8.70 2nd pressure hPa : 240
Rack travel in m: 8.90...9.00
3rd pressure hPa : 520
Rack travel in m: 9.90...10.30 **Omnibus** START CUT-OUT 1/min : 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version L16

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9a31 Edition : 10.02.89 : 30.9.88 Replaces Test oil : ISO-4113

Combination no. : 0 402 036 073

Injection pump

Pump designation: PES6P120A720/3LS470-

EP type number : 0 412 026 050

Governor

Governor design. : RQ300/1100PA813-4

Governer no.

: 0 421 801 425

Customer-spec. information Customer : MAN

Engine : D2866KUH

1st version kW : 265.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY Test pressure, bar: 30...32 Prestroke mm : 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 6-2-4-1-5-3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 750

Rack travel in mm : 12.50...12.60

Del.quantity cm3/: 23.8...24.0

100 s: (23.5...24.3)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300.0 2nd speed Rack travel in mm: 4.9...5.1 Del.quantity cm3/: 1.2...1.8

100 s: (0.9...2.1)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

> Degree: -2 rpm : 750

Rack travel in mm: 14.70...16.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Speed rpm : 750 Aneroid pressure h: 1000

Del.quantity : 238.0...240.0 1000 : (235.0...243.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm Rack travel in mm: 15.5

Testing:

1st rack travel in: 10.50 Aneroid pressure h: 1000 Speed rpm : 1145...1160 Speed : 1100 rpm Del.quantity cm3/: 218.0...222.0 1000 s: (215.0...225.0) Aneroid pressure h: 1000 2nd rack travel in: 4.00 rpm : 1185...1215 Speed 4th rack travel in: 1300 rpm : 0.00...1.00Speed Speed rpm : 650 Del.quantity cm3/: 238.0...244.0 LOW IDLE 1 1000 s: (235.0...247.0) Setting point w/out bumper spring Aneroid pressure h: 20 : 300 rom : 500 Speed rpm Rack travel in mm: 5.0 Del.quantity cm3/: 191.0...197.0 1000 s: (188.0...200.0) Testina: Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 119.0...121.0 Speed : 100 rpm Minimum rack trave: 6.50 : 300 Speed rpm 1000 s: (116.0...124.0) Rack travel in mm : 4.90...5.10 Rack travel in mm: 2.00 Speed : 400...440 mom. **BREAKAWAY** TORQUE CONTROL 1st version Dimension a mm : 0.35 1mm rack travel less than Torque control curve - 1st version : 1100 1st speed rpm full load rack tr: 10.50 Rack travel in m: 11.50...11.60 Speed rpm : 1145...1160 : 750 2nd speed rpm Rack travel in m: 12.70...12.90 STARTING FUEL DELIVERY rpm : 880 3rd speed Rack travel in m: 12.30...12.50 4th speed rpm : 925 Speed rpm_ : 100 Rack travel in m: 11.70...12.00 Del.quantity cm3/: 225.0...245.0 1000 s: (221.0...249.0) Aneroid/Altitude Compensator Test LOW IDLE Speed rpm : 300 Rack travel in mm : 4.90...5.10 1st version Settina Del.quantity cm3/: 12.0...18.0 : 500 Speed rom 1000 s: (9.0...21.0) hPa : 1000 Pressure Spread cm3 : 8.00Rack travel mm : 12.50...12.60 1000 s: (12.00) Measurement Remarks: Speed 1/min: 500 : MAN-NR. 2-7904 1st pressure hPa : -APPLICATION Rack travel in m: 8.50...8.70 2nd pressure hPa : 190 **Omnibus** Rack travel in m: 8.90...9.00 3rd pressure hPa : 520 Rack travel in m: 11.10...11.40 START CUT-OUT Speed 1/min: 220 (240) FUEL DELIVERY CHARACTERISTICS 1st version

L18

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet Edition

: MAN 11,9a33 : 30.09.88

Replaces Test oil

: 6.4.88 : ISO-4113

Combination no.

: 0 402 036 074

Injection pump

Pump designation: PES6P120A720/3LS470-

EP type number

: 0 412 026 050

Governor

Governor design. : RQ300/1100PA658-24

Governer no.

: 0 421 801 437

Customer-spec. information Customer

: MAN

Engine

: D2866KOH

1st version kW

Rated speed

: 265.0 : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Openina

pressure, bar

: 207...210

Orifice plate

diameter mm

: 0,8

Test Lines

: 1 680 750 067

Outside diameter

x Wall thickness

x Length mm

: 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

L19

: 2.80...2.90 Prestroke mm

: (2.75...2.95) Rack travel in mm : 9.00...12.00

Firing order : 6-2-4-1-5-3

Phasing

: 0-60-120-180-240-300

Tolerance + - 0

: 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed

rpm: 750

Rack travel in mm : 12.20...12.30

Del.guantity cm3/: 22.8...23.0

100 s: (22.5...23.3)

Spread

cm3 : 0.5

100 s: (0.9)

rpm : 300.02nd speed

Rack travel in mm: 4.7...4.9 Del.quantity cm3/: 1.2...1.8

100 s: (0.9...2.1)

Spread

cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 750

Aneroid pressure h: 1000

: 228.0...230.0

Anerota Del. quantity 1000

: (225.0...233.0) : 5.00

cm3 Spread

1000 : (9.00)

RATED SPEED

1st version

Setting point:

: 600

Rack travel in mm: 20.0

Testing:

1st rack travel in: 10.20 Speed rpm : 1145...1160 2nd rack travel in: 4.00 rpm : 1185...1215 Speed 4th rack travel in: 1300 rpm : 0.00...1.00 Speed LOW IDLE 1 Setting point w/out bumper spring : 300 rpm -Rack travel in mm: 4.8 Testina: Speed rpm : 100 Minimum rack trave: 6.30 rpm Rack travel in mm : 4.70...4.90 Rack travel in mm: 2.00 Speed : 345...385 rom TORQUE CONTROL Dimension a mm : 0.55 Torque control curve - 1st version rpm : 1100 1st speed Rack travel in m: 11.20...11.30 2nd speed : 750 rom Rack travel in m: 12.70...12.90 rpm : 920 3rd speed Rack travel in m: 12.40...12.60 4th speed rpm: 985 Rack travel in m: 11.60...11.90 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 ngn hPa : 1000 Pressure : 12.20...12.30 Rack travel mm Measurement $1/\min : 500$ Speed 1st pressure hPa : -Rack travel in m: 9.10...9.30 2nd pressure hPa : 80 Rack travel in m: 9.40,..9.50 3rd pressure hPa : 400 Rack travel in m: 11.00...11.40 START CUT-OUT Speed 1/min : 220 (240) FUEL DELIVERY CHARACTERISTICS 1st version

Aneroid pressure h: 1000 Speed : 1100 rpm Del.quantity cm3/: 210.0...214.0 1000 s: (207.0...217.0) Aneroid pressure h: 1000 Speed : 650 rpm Del.quantity cm3/: 228.0...234.0 1000 s: (225.0...237.0) : 500 Speed rpm Del.quantity cm3/: 188.0...200.0 1000 s: (185.0...203.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 134.0...136.0 1000 s: (131.0...139.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.20 Speed rpm : 1145...1160 STARTING FUEL DELIVERY Speed : 100 rpm Del.quantity cm3/: 225.0...245.0 1000 s: (221.0...249.0) LOW IDLE

Remarks:

: MAN-NR. 2-7910

APPLICATION

Omnibus

L20

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9a35 Edition : 07.04.89 Replaces : 11,7.88

Test oil : ISO-4113

Combination no. : 0 402 036 076

Injection pump

Pump designation : PES6P120A720/3LS470-

4

EP type number : 0 412 026 055

Governor

Governor design. : RQV300...1100PA700-5

Governer no. : 0 421 813 713

Customer—spec. information Customer : MAN

Engine : D2866LFG

1st version kW : 243.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0.8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 6-2-4-1-5-3

Phasing : 0-60-120-180-240-300

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 750

Rack travel in mm : 11.30...11.40

Del.quantity cm3/: 20.2...20.4

100 s: (19.9...20.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 4.8...5.0 Del.quantity cm3/ : 1.2...1.8

100 s: (0.9...2.1) Spread cm3 : 0.8 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.50...1.90 2nd speed rpm : 450

travel mm : 2.90...3.50

4th speed rpm : 1100

travel mm : 7.40...7.60

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

Speed rpm : 1175

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 750 Aneroid pressure h: 1000

Del.quantity : 202.0...207.0) Rack travel in m: 9.30...9.40 3rd pressure hPa : 310 Spread cm3 : 5.00 Rack travel in m: 10.80...11.20 1000 : (9.00) START CUT-OUT RATED SPEED Speed 1/min : 220 (240) 1st version Control Lever FUEL DELIVERY CHARACTERISTICS position degrees: 48...56 Testing: 1st version 1st rack travel in: 9.80 Aneroid pressure h: 1000 rpm : 1140...1150 , : <u>110</u>0 Speed rom 2nd rack travel in: 4.00 Del.quantity cm3/: 203.0...207.0 Speed rpm : 1225...1255 4th rack travel in: 1350 1000 s: (200.0...210.0) Aneroid pressure h: 1000 Speed rpm : 0.00...1.00LOW IDLE 1 Control Lever position degrees: 14...22 Speed rpm : 500 Del.quantity cm3/ : 184.0...196.0 Testina: 1000 s: (181.0...199.0) Speed : 100 תוכרו Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 132.0...134.0 1000 s: (129.0...137.0) Minimum rack trave: 6.40 Speed : 300 rpm . Rack travel in mm : 4.80...5.00 CONSTANT REGULATION rpm : 310...410 Speed **BREAKAWAY** TORQUE CONTROL 1st version Dimension a mm : 0.80 1mm rack travel less than Torque control curve - 1st version 1st speed rpm : 750 full load rack tr: 9.80 Rack travel in m: 11.60...11.70 Speed rpm : 1140...1150 2nd speed rpm : 1100 Rack travel in m: 10.80...10.90 STARTING FUEL DELIVERY 3rd speed rpm : 865 Rack travel in m: 11.30...11.40 Speed rpm : 100 Del.quantity cm3/ : 225.0...245.0 1000 s: (221.0...249.0) 4th speed : 985 rom Rack travel in m: 10.90...11.20 Aneroid/Altitude Compensator Test LOW IDLE Speed rpm : 3001st version Rack travel in mm : 4.80...5.00 Del.quantity cm3/: 12.0...18.0 Setting Speed : 500 1000 s: (9.0...21.0) man hPa : 1000 Pressure Spread cm3 : 8.00Rack travel mm : 11.30...11.40 1000 s: (12.00) Measurement Remarks: 1/min: 500 Speed : MAN-NR. 2-7911

1st pressure hPa : -

2nd pressure hPa : 85

Rack travel in m: 9.00...9.20

BOSCH INJ. PUMP TEST SPECIFICATIONS : 2.80...2.90 Prestroke mm : (2.75...2.95) Rack travel in mm : 9.00...12.00 Firing order : 6-2-4-1-5-3 Note remarks Test sheet : MAN 11,9a37 Edition : 10.02.89 Replaces Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 402 036 077 Tolerance + - ° : 0.50 (0.75) Injection pump Pump designation : PES6P120A720/3LS470-Time to cyl. no. : 6 EP type number : 0 412 026 050 BASIC SETTING Governor Governor design. : RQ300/1100PA813-6 1st speed rpm: 750 Governer no. : 0 421 801 466 Rack travel in mm : 11.40...11.50 Customer-spec. information Customer Del.quantity cm3/: 20.0...20.2 Engine : D2866TUH/001 100 s: (19.7...20.5) 1st version kW : 213.0 Spread cm3 : 0.5: 2200 Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS 2nd speed rpm : 300.0Rack travel in mm : 5.2...5.4 Del.quantity cm3/ : 1.2...1.8 100 s: (0.9...2.1) Test oil inlet temp. °C : 38...42 Overflow valve Spread cm3 : 0.8: 1 417 413 025 100 s: (1.2) Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Control-lever position Test nozzle holder Degree: -2 rpm : 750 : 1 688 901 019 assembly Rack travel in mm : 14.70...16.30 Opening FULL LOAD DELIV. AT FULL LOAD STOP pressure, bar : 207...210 Orifice plate 1st version diameter mm : 0,8 Speed rpm : 750 Aneroid pressure h: 1000 : 200.0...202.0 Del.quantity Test lines 1000 : 1 680 750 067 : (197.0...205.0) : 5.00 Spread cm3 Outside diameter 1000 : (9.00)

x Wall thickness

x Lenath mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY Test pressure, bar: 30...32

1st version Setting point: Speed rpm -Rack travel in mm: 15.5 Testing:

RATED SPEED

1st rack travel in: 10.40 Speed rpm : 1145...1160 2nd rack travel in: 4.00 rpm : 1170...1200 Speed 4th rack travel in: 1300 Speed rpm : 0.00...1.00LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 5.3 Testina: Speed : 100 rpm Minimum rack trave: 6.80 Speed : 300 rpm Rack travel in mm : 5.20...5.40
Rack travel in mm : 2.00 : 390...430 Speed rom TORQUE CONTROL Dimension a mm Torque control curve - 1st version 1st speed rpm : 1100 Rack travel in m: 11.40...11.50 2nd speed : 750 rpm Rack travel in m: 11.40...11.60 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm Pressure hPa : 1000 Rack travel mm : 11.40...11.50 Measurement 1/min : 500 Speed 1st pressure hPa : -Rack travel in m: 8.50...8.70 2nd pressure hPa : 190 Rack travel in m: 8.80...8.90 3rd pressure hPa : 350 Rack travel in m: 9.80...10.20 START CUT-OUT Speed 1/min : 220 (240) FUEL DELIVERY CHARACTERISTICS

Del.quantity cm3/: 208.0...214.0 1000 s: (205.0...217.0)

Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 119.0...121.0 1000 s: (116.0...124.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.40 rpm : 1145...1160 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 215.0...235.0 1000 s: (211.0...239.0)

LOW IDLE

Speed rpm : 300 Rack travel in mm : 5.20...5.40 Del.quantity cm3/ : 12.0...18.0 1000 s: (9.0...21.0) Spread cm3 : 8.00 1000 s: (12.00)

Remarks:

: MAN-NR. 2-7893

APPLICATION

Omnibus

Speed

1st version

Aneroid pressure h: 1000

rpm : 1100

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet

: MAN 11,9 i2

Edition

: 31.03.89

Replaces

Test oil

: ISO-4113

Combination no. : 0 402 036 729

Injection pump

Pump designation : PES6P120A720LS3205

EP type number

: 0 412 026 729

Governor

Governor design. Governer no.

: RQ300/1100PA813-7

: 0 421 801 474

Customer-spec. information Customer

: MAN

Engine

: D2866LUH

1st version kW

: 273.0

Rated speed

: 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 1 688 901 019

Openina

pressure, bar

: 207...210

Orifice plate

diameter mm

: 0,8

Test lines

: 1 680 750 067

Outside diameter

x Wall thickness

x Length mm

: 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 3.70...3.80

: (3.65...3.85)
Rack travel in mm : 9.00...12.00

Firing order

: 6-2-4-1-5-3

Phasing

: 0-60-120-180-240-300

Tolerance + - °

: 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed

rpm: 700

Rack travel in mm : 12.80...12.90

Del.quantity cm3/: 23.6...23.8

100 s: (23.3...24.1)

Spread

cm3 : 0.5

100 s: (0.9)

rpm : 300.0

Rack travel in mm : 4.1...4.3 Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread

2nd speed

cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

rpm : 650 Speed Rack travel in mm : 14.70...16.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Spread

rpm : 700

Aneroid pressure h: 1200

Del.quantity

: 236.0...238.0

1000 : (233.0...241.0) cm3

: 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

: 650

rpm Rack travel in mm: 15.5

Testing:

1st rack travel in: 11.80

L25

rpm : 1145...1160 Speed 2nd rack travel in: 4.00 : 1190...1220 Speed rpm 4th rack travel in: 1350 Speed rpm : 0.00...1.00LOW IDLE 1 Setting point w/out bumper spring rpm Rack travel in mm: 4.2 Testing: Speed rpm Minimum rack trave: 5.70 rpm : 300 Speed Rack travel in mm : 4.10...4.30 Rack travel in mm : 2.00 Speed rpm : 380...420 TORQUE CONTROL Dimension a mm : 0.20 Torque control curve - 1st version 1st speed rpm : 700 Rack travel in m: 14.20...14.40 nd speed rpm : 1100 Rack travel in m: 13.00...13.10 2nd speed 3rd speed : 885 rom Rack travel in m: 13.80...14.00 4th speed : 935 rpm Rack travel in m: 13.20...13.50 Aneroid/Altitude Compensator Test 1st version Setting Speed rom : 500 hPa : 1200 Pressure Rack travel mm : 12.80...12.90 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 8.50...8.70 2nd pressure hPa : 190 Rack travel in m: 8.90...9.00 3rd pressure hPa : 520 Rack travel in m: 11.10...11.40 START CUT-OUT Speed 1/min : 220 (240) FUEL DELIVERY CHARACTERISTICS

Speed rpm : 1100 Del.quantity cm3/ : 226.0...232.0 1000 s: (223.0...235.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 120.0...122.0 1000 s: (117.0...125.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.80 Speed rpm : 1145...1160 INTERMEDIATE RATED SPEED Rack travel in mm: 4.00 STARTING FUEL DELIVERY Speed : 100 rpm Del.quantity cm3/: 200.0...220.0 1000 s: (196.0...224.0) LOW IDLE Speed rpm : 300 Rack travel in mm : 4.10...4.30 Del.quantity cm3/: 17.0...23.0 1000 s: (14.0...26.0) Spread cm3 : 8.001000 s: (12.00) Remarks: : MAN-NR. 2-7946 APPLICATION **Omnibus**

1st version

Aneroid pressure h: 1200

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 9,5 a Edition : 07.04.89 Replaces : 11.85 Test oil : ISO-4113

Combination no. : 0 402 045 022

Injection pump

Pump designation : PES5P110A820LS434 EP type number : 0 412 015 020

Governor

Governor design. : RQ300/1100PA327-3

: 0 421 801 151 Governer no.

Customer spec. information

Customer : DAIMLER-BENZ

Engine : 0M409

1st version kW : 141.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 D25

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 0 681 343 009 assembly

Opening |

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10 : (2.95...3.15)

Rack travel in mm : 9.00...12.00 : 1-3-5-4-2 Firing order

Phasina : 0-72-144-216-288

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 5

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 11.40...11.50

Del.quantity cm3/: 11.8...12.0

100 s: (11.5...12.3)

cm3 : 0.4Spread

100 s: (0.8)

rpm : 300.02nd speed Rack travel in mm: 8.0...8.2 Del.quantity cm3/: 1.2...1.8

100 s: (0.9...2.0)

cm3 : 0.4Spread

100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 600

Rack travel in mm : 13.80...14.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1100 Speed

Del.quantity : 118.0...120.0 1000 : (115.0...123.0)

Spread cm3 : 4.00

1000 : (8.00)

RATED SPEED

1st version

Setting point:

: 600 Speed rpm Rack travel in mm: 14.2

Testing:

+

1st rack travel in: 10.50

rpm : 1140...1150 Speed

2nd rack travel in: 4.00 rpm : 1170...1200 Speed LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 8.1 Testing: Speed rpm: 100
Minimum rack trave: 10.00
Speed rpm: 300
Rack travel in mm: 8.00...8.20
Rack travel in mm: 2.00
Speed rpm: 375 /415 Speed : 375...415 rom FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 600 Del.quantity cm3/: 100.0...104.0 1000 s: (97.0...107.0) cm3 : 6.00 1000 s: (9.00) Spread **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.50 Speed rpm : 1140...1150 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 130.0...150.0 1000 s: (126.0...154.0) Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 3.00...3.10 : (2.95...3.15) Note remarks Rack travel in mm : 9.00...12.00 : 1-3-5-4-2 Firing order : MB 9,5 a 4 : 07.04.89 Test sheet Edition : 11.85 Replaces : ISO-4113 Test oil Phasing : 0-72-144-216-288 Combination no. : 0 402 045 023 Tolerance $+ - \circ : 0.50 (0.75)$ Injection pump Time to cyl. no. : 5 Pump designation : PES5P110A820LS434 : 0 412 015 020 EP type number BASIC SETTING Governor Governor design. : RQ300/1100PA327-4 1st speed rpm: 1100 Governer no. : 0 421 801 173 Rack travel in mm : 10.40...10.50 Customer-spec. information Customer Del.guantity cm3/: 11.0...11.2 : DAIMLER-BENZ : 0M409 Engine 100 s: (10.7...11.4) : 135.0 1st version kW Spread cm3 : 0.4Rated speed : 2200 100 s: (0.8) TEST BENCH REQUIREMENTS 2nd speed rpm : 300.0Rack travel in mm: 7.6...7.8 Test oil Del.quantity cm3/: 1.2...1.8 100 s: (0.9...2.0) inlet temp. °C : 38...42 Overflow valve Spread cm3 : 0.4: 1 417 413 025 100 s: (0.7) Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Control-lever position Overflow Degree: -1 Speed rpm : 600 Rack travel in mm : 13.80...14.60 quantity min. 1/h: 100...120 Test nozzle holder : 0 681 343 009 FULL LOAD DELIV. AT FULL LOAD STOP assembly Opening 1st version : 172...175 pressure, bar rpm : 1100 Speed Del.quantity 1000 Speed : 110.0...112.0 : (107.5...114.5) Test lines : 1 680 750 015 : 4.00 Spread cm3 : (8.00) 1000 Outside diameter x Wall thickness RATED SPEED x Length mm : 6.00x1.50x600 1st version (A) Injection pump setting values Insp. values in parentheses Setting point: Set equal delivery quant. Speed rpm per values Rack travel in mm : 14.2 BEGINNING OF DELIVERY Testing:

1st rack travel in: 9.40

Speed

rpm : 1140...1150

Test pressure, bar: 25...27

2nd rack travel in: 4.00 rpm : 1170...1200 Speed 4th rack travel in: 1300 rpm : 0.00...1.50Speed LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 7.7 Testing: rpm : 100 Speed Minimum rack trave: 9.10 rpm : 300 Speed Rack travel in mm : 7.60...7.80 Rack travel in mm : 2.00 Speed rpm : 380...420 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 600

Del.quantity cm3/: 90.0...94.0 1000 s: (87.0...97.0) Spread cm3 : 6.00 1000 s: (9.00)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.40 Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 130.0...150.0 1000 s: (126.0...154.0)

Remarks:

Prestroke mm : 3.00...3.10 : (2.95...3.15) Rack travel in mm : 9.00...12.00 Firing order : 1-3-5-4-2 BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MB 9,5 a 9 Test sheet : 07.04.89 Edition Replaces Test oil : ISO-4113 Phasing : 0-72-144-216-288 Combination no. : 0 402 045 026 Tolerance + - ° : 0.50 (0.75) Injection pump Time to cyl. no. : 5Pump designation : PES5P110A820LS434 EP type number : 0 412 015 020 BASIC SETTING Governor Governor design. : RQ300/1100PA327-4 1st speed rpm: 1100 Governer no. : 0 421 801 173 Rack travel in mm : 10.40...10.50 Customer-spec. information Customer : DAIMLER-BENZ Del.quantity cm3/: 11.0...11.2 Engine : 0M409 100 s: (10.7...11.5) 1st version kW : 135.0 Spread cm3 : 0.4Rated speed : 2200 100 s: (0.8) TEST BENCH REQUIREMENTS 2nd speed rpm : 300.0 Rack travel in mm: 7.6...7.8
Del.quantity cm3/: 1.2...1.8
100 s: (0.9...2.0) Test oil inlet temp. °C : 38...42 Overflow valve Spread cm3 : 0.4: 1 417 413 025 100 s: (0.7) Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Control-lever position Overflow Degree: -1 quantity min. 1/h: 100...120 rpm : 600 Speed Rack travel in mm: 13.80...14.60 Test nozzle holder : 0 681 343 009 assembly FULL LOAD DELIV. AT FULL LOAD STOP Opening 1st version : 172...175 pressure, bar Speed rpm : 1100 Del.quantity : 110.0...112.0 1000 : (107.0...115.0) Test Lines : 1 680 750 015 : 4.00 Spread cm3 : (8.00) 1000 Outside diameter x Wall thickness RATED SPEED : 6.00X1.50X600 x Length mm 1st version (A) Injection pump setting values Insp. values in parentheses Setting point: Set equal delivery quant. Speed rpm

Rack travel in mm: 14.2

1st rack travel in: 9.40

rpm : 1140...1150

Testing:

Speed

MO3

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

2nd rack travel in: 4.00 rpm : 1170...1200 Speed 4th rack travel in: 1300 Speed rpm: 0.00...1.50 LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 7.7 Testing: rpm : 100 Speed Minimum rack trave: 9.10 Speed rpm: 300
Rack travel in mm: 7.60...7.80
Rack travel in mm: 2.00
Speed rpm: 380...420 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 600 Speed rpm : 000 Del.quantity cm3/: 90.0...94.0 1000 s: (87.0...97.0) Spread cm3 : 6.00 1000 s: (9.00) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.40 Speed rpm : 1140...1150 Speed STARTING FUEL DELIVERY rpm : 100 Del.quantity cm3/: 130.0...150.0 1000 s: (126.0...154.0) Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS : 3.00...3.10 : (2.95...3.15) Prestroke mm Note remarks Rack travel in mm : 9.00...12.00 : 1-3-5-4-2 Firing order Test sheet : MB 9,5 a 10 Edition : 07.02.89 Replaces Test oil : ISO-4113 Phasing : 0-72-144-216-288 Combination no. : 0 402 045 027 Tolerance $+ - \circ : 0.50 (0.75)$ Injection pump Time to cyl. no. : 5 Pump designation : PES5P110A820LS434 EP type number : 0 412 015 020 BASIC SETTING Governor Governor design. : RQV300...1100PA594-1 rpm: 1100 1st speed Governer no. : 0 421 813 336 Rack travel in mm : 11.00...11.10 Customer-spec. information Customer : DAIMLER-BENZ Del.quantity cm3/: 11.0...11.2 : 0M409 Engine 100 s: (10.7...11.5) 1st version kW : 135.0 Spread cm3 : 0.4Rated speed : 2200 100 s: (0.8) TEST BENCH REQUIREMENTS 2nd speed rpm : 300.0Test oil Rack travel in mm: 8.0...8.2 Del.quantity cm3/: 1.2...1.8 100 s: (0.9...2.0) inlet temp. °C : 38...42 Overflow valve cm3 : 0.4Spread : 1 417 413 025 100 s: (0.7) Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Control-lever position Overflow Degree: -1 quantity min. 1/h: 100...120 Speed rpm : 1150 Rack travel in mm : 15.20...17.80 Test nozzle holder : 0 681 343 009 assembly FULL LOAD DELIV. AT FULL LOAD STOP Opening . 1st version pressure, bar : 172...175 Speed rpm : 1100 Del.quantity : 110.0...112.0 1000 : (107.0...115.0) Test lines : 1 680 750 015 : 4.00 Spread cm3 1000 : (8.00) Outside diameter x Wall thickness RATED SPEED x Length mm : 6.00x1.50x600 1st version (A) Injection pump setting values

Control lever

position degrees: 60...68

Testing:

1st rack travel in: 10.00 Speed rpm : 1140...1150

2nd rack travel in: 4.00 rpm : 1175...1205 Speed

MO5

Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

4th rack travel in: 1300 Speed rpm : 0.00...1.00 LOW IDLE 1 Control lever position degrees: 30...38 Testing: Speed rpm : 100 Minimum rack trave: 9.50 Speed rpm : 300 Rack travel in mm : 8.00...8.20 CONSTANT REGULATION rpm : 320...435 Speed START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 600
Del.quantity cm3/: 91.0...95.0
1000 s: (88.0...98.0)
1000 s: (9.00) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.00 Speed rpm : 1140...1150 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 130.0...150.0 1000 s: (126.0...154.0) Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 2.80...2.90 : (2.75...2.95) Rack travel in mm : 9.00...12.00 Firing order : 6-2-4-1-5-3 Note remarks Test sheet : MB 11,0 b : 21.04.89 Edition : 7.85 Replaces Test oil : ISO-4113 Phasina : 0-60-120-180-240-300 Combination no. : 0 402 046 132 Tolerance + - 0 : 0.50 (0.75) Injection pump Time to cyl. no. : 6 Pump designation : PES6P100A820LS264Z EP type number : 0 412 006 026 BASIC SETTING Governor Governor design. : RQ300/1100PA327R 1st speed rpm: 1100 Governer no. : 0 421 801 062 Rack travel in mm : 12.70...12.80 Customer-spec. information Customer : DAIMLER-BENZ Del.quantity cm3/: 10.9...11.1 Engine : OM 407 100 s: (10.7...11.3) 1st version kW : 154.5 Spread cm3 : 0.3: 2200 Rated speed 100 s: (0.6) TEST BENCH REQUIREMENTS rpm : 300.0 2nd speed Test oil Rack travel in mm : 8.5...8.7 inlet temp. °C Del.quantity cm3/: 0.8...1.4 : 38...42 100 s: (0.5...1.6) Overflow valve Spread cm3 : 0.3: 1 417 413 025 100 s: (0.5) Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Control-lever position Overflow Degree: -1 quantity min. 1/h: 100...120 rpm : 500 Speed Rack travel in mm : 13.80...14.60 Test nozzle holder : 0 681 343 009 assembly FULL LOAD DELIV. AT FULL LOAD STOP Openina 1st version pressure, bar : 172...175 Speed : 1100 rom : 109.0...111.0 Del.quantity 1000 : (107.0...113.0) cm3 : 3.00 Test lines : 1 680 750 015 Spread 1000 : (6.00) Outside diameter x Wall thickness RATED SPEED : 6.00x1.50x600 x Length mm 1st version (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. Setting point: Speed rpm : 500 Rack travel in mm : 14.2 per values

Testing:

Speed

1st rack travel in: 11.70

rpm : 1140...1150

MO7

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

2nd rack travel in: 4.00 Speed rpm : 1195...1225 4th rack travel in: 1350 Speed rpm : 0.00...1.50 LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 8.6 Testing: Speed rpm: 100
Minimum rack trave: 10.10
Speed rpm: 300
Rack travel in mm: 8.50...8.70
Rack travel in mm: 2.00 Speed rpm : 400...430 RACK STOP ADJUSTMENT Speed rpm : 500 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.70 Speed rpm : 1140...1150 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 135.0...155.0 1000 s: (131.0...159.0) Remarks: **APPLICATION** Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 3.00...3.10 : (2.95...3.15) Note remarks Rack travel in mm : 9.00...12.00 Firing order : 6-2-4-1-5-3 Test sheet : MB 11,4 b : 21.04.89 Edition Replaces : 12.9.86 Test oil : ISO-4113 : 0-60-120-180-240-300 Phasing Combination no. : 0 402 046 151 Tolerance + - 0 : 0.50 (0.75) Injection pump Time to cyl. no. : 6 Pump designation : PES6P100A820LS351Y EP type number : 0 412 006 030 BASIC SETTING Governor Governor design. : RQ300/1100PA327R rpm: 1100 1st speed : 0 421 801 062 Governer no. Rack travel in mm : 11.70...11.80 Customer-spec. information Customer : DAIMLER-BENZ Del.quantity cm3/: 9.9...10.1 100 s: (9.7...10.3) : OM 407 Engine : 147.1 1st version kW Spread cm3 : 0.3Rated speed : 2200 100 s: (0.6) TEST BENCH REQUIREMENTS rpm : 300.0 2nd speed Rack travel in mm : 7.5...7.7 Del.quantity cm3/ : 0.5...1.1 Test oil inlet temp. °C : 38...42 100 s: (0.2...1.3) Overflow valve Spread cm3 : 0.3: 1 417 413 025 100 s: (0.5) GUIDE SLEEVE POSITION Inlet press., bar: 1.50 Control-lever position Overflow Degree: -1 quantity min. 1/h: 100...120 rpm : 500 Speed Rack travel in mm : 13.80...14.60 Test nozzle holder : 0 681 343 009 assembly FULL LOAD DELIV. AT FULL LOAD STOP Openina 1st version : 172...175 pressure, bar rpm : 1100 Speed Del.quantity : 99.0...101.0 1000 : (97.0...103.0) Test Lines : 1 680 750 015 Spread cm3: 3.00 1000 : (6.00) Outside diameter x Wall thickness RATED SPEED : 6.00x1.50x600 x Length mm 1st version (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. Setting point: Speed rpm per values Rack travel in mm: 14.2

Testing:

Speed

1st rack travel in: 10.70

rpm : 1140...1150

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

2nd rack travel in: 4.00 rpm : 1195...1225 Speed 4th rack travel in: 1350 Speed rpm : 0.00...1.50 LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 7.6 Testing: : 100 Speed rpm Minimum rack trave: 9.60 Speed rpm : 300
Rack travel in mm : 7.50...7.70
Rack travel in mm : 2.00
Speed rpm : 370...410 RACK STOP ADJUSTMENT rpm : 500 Speed **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.70 Speed rpm : 1140...1150 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 130.0...150.0 1000 s: (126.0...154.0) Remarks: **APPLICATION** Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 3.00...3.10 : (2.95...3.15) Note remarks Rack travel in mm : 9.00...12.00 : 6-2-4-1-5-3 Firing order Test sheet : MB 11,4 p : 21.04.89 Edition : 11.85 Replaces Test oil : ISO-4113 Phasina : 0-60-120-180-240-300 Combination no. : 0 402 046 197 Tolerance + - 0 : 0.50 (0.75) Injection pump Time to cyl. no. : 6 Pump designation : PES6P100A820LS351 : 0 412 006 028 EP type number BASIC SETTING Governor Governor design. : RQ300/950PA483R 1st speed rpm: 950 Governer no. : 0 421 801 103 Rack travel in mm : 13.40...13.50 Customer-spec. information Customer : DAIMLER-BENZ Del.quantity cm3/: 12.5...12.7 Engine : OM407H 100 s: (12.3...12.9) 1st version kW : 161.8 cm3 : 0.3Spread : 1900 Rated speed 100 s: (0.6) TEST BENCH REQUIREMENTS rpm : 300.02nd speed Test oil Rack travel in mm: 8.0...8.2 Del.quantity cm3/: 1.4...2.0 inlet temp. °C : 38...42 100 s: (1.1...2.2) Overflow valve cm3 : 0.3Spread : 1 417 413 025 100 s: (0.5) Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Control-lever position Overflow Degree: -1 quantity min. 1/h: 100...120 Speed rpm : 600 Rack travel in mm : 13.80...14.60 Test nozzle holder : 0 681 343 009 FULL LOAD DELIV. AT FULL LOAD STOP assembly **Opening** 1st version rpm : 950 : 172...175 pressure, bar Speed : 125.0...127.0 Del.quantity 1000 : (123.0...129.0) Test lines : 1 680 750 015 Spread : 3.00 cm3 1000 : (6.00) Outside diameter x Wall thickness RATED SPEED x Length mm : 6.00X1.50X600 1st version (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. Setting point: : 600 Speed rpm Rack travel in mm: 14.2 per values BEGINNING OF DELIVERY Testina: Test pressure, bar: 25...27 1st rack travel in: 12.40

Speed

rpm : 990...1000

2nd rack travel in: 4.00 Speed rpm : 1015...1045 4th rack travel in: 1200 Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 8.1

Testing:

rpm : 100 Speed Minimum rack trave: 10.10 Speed rpm: 300
Rack travel in mm: 8.00...8.20
Rack travel in mm: 2.00
Speed rpm: 370...410

RACK STOP ADJUSTMENT

Speed rpm : 600

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.40 rpm : 990...1000 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 135.0...155.0 1000 s: (131.0...159.0)

Remarks:

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

: ALO 13,8 e1 : 3.5.89 Test sheet Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 046 203

Injection pump

Pump designation : PES6P120A320RS411

Governor

Governor design.: RQV445...1250PA497K

Customer-spec. information

Customer : ALLIS CHALMERS

Engine : 6120 T

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 40...45

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.5

Test nozzle holder

assembly : 0 681 443 022

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 060

Outside diameter x Wall thickness

: 8,00x2,00x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

: 2.80...2.90 Prestroke mm

: (2.75...2.95)

Rack travel in mm: 10.50

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1250

Rack travel in mm: 10.30...10.40

Del.quantity cm3/: 18.6...18.8

100 s: (-)

cm3 : 0.5Spread

100 s: (-)

rpm : 445 2nd speed

Rack travel in mm : 5.70...5.90

Del.quantity cm3/: 1.9...2.5

100 s: (-)

cm3 : 0.8Spread

100 s: (-)

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1250 Speed

Rack travel in mm : 15.50...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Del.quantity : 186.5...188.5

1000 : (-) : 5.0 cm3

Spread 1000 : (-)

RATED SPEED

1st version

Control lever

position degrees: 56...62

Testing:

1st rack travel in: 9.30

rpm : 1290...1300 Speed

2nd rack travel in: 4.00

: 1385...1415 Speed rpm

4th rack travel in: 1450

Speed rpm : 0.30...1.70

LOW IDLE 1

Control Lever

position degrees: 15.5...21.5

Testina:

Speed rpm

Minimum rack trave: 7.30

M13

Speed rpm : 445
Rack travel in mm : 5.70...5.90
Rack travel in mm : 2.00
Speed rpm : 705...765 TORQUE CONTROL Dimension a mm : 0.60 Torque control curve - 1st version 1st speed rpm : 1250
Rack travel in m: 10.20...10.30
2nd speed rpm : 800
Rack travel in m: 10.80...10.90 FUEL DELIVERY CHARACTERISTICS 1st version rpm_ : 800 Speed Del.quantity cm3/: 184.4...188.5 1000 s: (-) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 9.30 rpm : 1290...1300 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 210.0...250.0 1000 s: (-) LOW IDLE rpm : 445 Speed Del.quantity cm3/: 19.0...25.0 1000 s: (-) Remarks: **APPLICATION** Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS : 3.00...3.10 : (2.95...3.15) Prestroke mm Rack travel in mm : 9.00...12.00 Firing order : 6-2-4-1-5-3 Note remarks Test sheet : MAN 11,1 a7 : 11.01.88 Edition Replaces : 10.85 Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 402 046 208 Tolerance + - ° : 0.50 (0.75) Injection pump Time to cyl. no. : 6 Pump designation : PES6P120A720LS388 : 0 412 026 030 EP type number BASIC SETTING Governor Governor design. : RQ250/1100PA509 1st speed rpm: 750: 0 421 801 117 Governer no. Rack travel in mm : 11.40...11.50 Customer-spec, information Customer : MAN Del.quantity cm3/: 17.8...18.0 : D2566MKF Engine 100 s: (17.5...18.3) 1st version kW : 206.0 Spread cm3 : 0.5Rated speed : 2200 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 250.0 2nd speed Test oil Rack travel in mm: 6.2...6.4 Del.quantity cm3/: 1.2...1.8 100 s: (0.9...2.1) inlet temp. °C : 38...42 cm3 : 0.8 100 s: (1.2) Overflow valve Spread : 1 417 413 025 Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Control-lever position Test nozzle holder Degree: -2 : 1 688 901 019 assembly Speed rpm : 600 Rack travel in mm : 19.20...20.80 Openina . : 207...210 pressure, bar FULL LOAD DELIV. AT FULL LOAD STOP Orifice plate 1st version diameter mm : 0,8 Speed rpm : 750 Aneroid pressure h: 700 Del.quantity : 178.0...180.0 Test lines 1000 : (175.0...183.0) : 1 680 750 067 Spread : 5.00 cm3 1000 : (9.00) Outside diameter x Wall thickness x Length mm : 6.00x1.50x1000

RATED SPEED

1st version

Setting point:
Speed rpm : 600
Rack travel in mm : 20.0

Testing:
1st rack travel in: 9.20

M15

(A) Injection pump setting values

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Insp. values in parentheses Set equal delivery quant.

Speed rpm : 1100 Del.quantity cm3/ : 160.0...166.0 1000 s: (157.0...169.0) Aneroid pressure h: 700 rpm : 1145...1160 Speed 2nd rack travel in: 4.00 Speed rpm : 1180...1210 4th rack travel in: 1400 rpm : 0.00...1.00 Speed Speed : 650 rpm Del.quantity cm3/: 171.0...177.0 LOW IDLE 1 1000 s: (168.0...180.0) Setting point w/out bumper spring Aneroid pressure h: 310 Speed : 500 rpm Speed rpm Del.quantity cm3/: 131.0...137.0 1000 s: (128.0...140.0) Rack travel in mm: 6.3 Testina: Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 104.0...106.0 1000 s: (101.0...109.0) : 100 Speed rpm Minimum rack trave: 7.80 Speed rpm: 250 Rack travel in mm: 6.20...6.40 Rack travel in mm : 2.00 Speed rpm : 335...375 **BREAKAWAY** TORQUE CONTROL 1st version Dimension a mm : 0.50 1mm rack travel less than Torque control curve - 1st version 1st speed rpm : 750 full load rack tr: 9.20 Rack travel in m: 11.40...11.50 rpm : 1145...1160 Speed 2nd speed rpm : 1100 Rack travel in m: 10.20...10.30 STARTING FUEL DELIVERY 3rd speed rpm : 875 Rack travel in m: 11.10...11.30 4th speed rpm : 985 Speed : 100 rpm Del.quantity cm3/: 205.0...225.0 1000 s: (201.0...229.0) Rack travel in m: 10.40...10.70 Aneroid/Altitude Compensator Test LOW IDLE Speed rpm : 250 Rack travel in mm : 6.20...6.40 1st version Settina Del.quantity cm3/: 12.0...18.0 1000 s: (9.0...21.0) rpm : 500 hPa : 700 Speed Pressure Spread cm3 : 8.00: 11.40...11.50 Rack travel mm 1000 s: (12.00) Measurement Remarks: Speed 1/min: 500 1st pressure hPa : -Rack travel in m: 9.20...9.30 2nd pressure hPa : 310 Rack travel in m: 10.30...10.40 3rd pressure hPa : 430 Rack travel in m: 10.90...11.10 START CUT-OUT Speed 1/min : 170 (190) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700

M16

Prestroke mm : 3.00...3.10 : (2.95...3.15) Rack travel in mm : 9.00...12.00 BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Firing order : 6-2-4-1-5-3 Test sheet : MAN 11,1q26 Edition : 11.01.88 Replaces Test oil : ISO-4113 Phasina : 0-60-120-180-240-300 Combination no. : 0 402 046 209 Tolerance + - ° : 0.50 (0.75) Injection pump Time to cyl. no. : 6 Pump designation : PES6P120A720LS388 EP type number : 0 412 026 030 BASIC SETTING Governor Governor design. : RQ250/1100PA509 1st speed rpm: 750 Governer no. : 0 421 801 117 Rack travel in mm : 11.40...11.50 Customer-spec, information Customer : MAN Del.quantity cm3/: 17.8...18.0 Engine : D2566MK 100 s: (17.5...18.3) : 206.0 1st version kW Spread cm3 : 0.5: 2200 Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 250.02nd speed Rack travel in mm: 6.2...6.4 Test oil Del.quantity cm3/: 1.2...1.8 100 s: (0.9...2.1) inlet temp. °C : 38...42 cm3 : 0.8 100 s: (1.2) Overflow valve Spread : 1 417 413 025 Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Control-lever position Test nozzle holder Degree: -2 assembly : 1 688 901 019 rpm : 600 Speed Rack travel in mm : 19.20...20.80 Opening . : 207...210 pressure, bar FULL LOAD DELIV. AT FULL LOAD STOP Orifice plate 1st version diameter mm : 0,8 Speed rpm : 750 Aneroid pressure h: 700 Del.quantity : 1/8.0...183.0) : 1 680 750 067 : 5.00 Spread cm3 1000 : (9.00) x Length mm : 6.00X1.50X1000 RATED SPEED

Test lines

Outside diameter x Wall thickness

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27

Setting point: Speed rom Rack travel in mm : 20.0 Testina: 1st rack travel in: 9.20

1st version

rpm : 1145...1160 Speed 2nd rack travel in: 4.00 Speed rpm : 1180...1210 4th rack travel in: 1400 rom : 0.00...1.00Speed LOW IDLE 1 Setting point w/out bumper spring Speed rpm Rack travel in mm: 6.3 Testing: Speed rpm : 100 Minimum rack trave: 7.80 : 250 rpm Rack travel in mm : 6.20...6.40 Rack travel in mm: 2.00 rpm : 335...375 Speed TORQUE CONTROL Dimension a mm : 0.50 Torque control curve - 1st version st speed rpm : 750 Rack travel in m: 11.40...11.50 1st speed rpm : 1100 2nd speed Rack travel in m: 10.20...10.30 3rd speed rpm : 875 Rack travel in m: 11.10...11.30 4th speed rpm : 985 Rack travel in m: 10.40...10.70 Aneroid/Altitude Compensator Test 1st version Setting Speed rpm : 500 Pressure hPa : 700 Rack travel mm : 11.40...11.50 Measurement 1/min: 500 Speed 1st pressure hPa :-Rack travel in m: 9.20...9.30 2nd pressure hPa : 310 Rack travel in m: 10.30...10.40 3rd pressure hPa : 430 Rack travel in m: 10.90...11.10 START CUT-OUT 1/min: 170 (190) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700

Speed rpm : 1100 Del.quantity cm3/ : 160.0...166.0 1000 s: (157.0...169.0) Aneroid pressure h: 700 Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 104.0...106.0 1000 s: (101.0...109.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.20 rpm : 1145...1160 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 205.0...225.0 1000 s: (201.0...229.0)

LOW IDLE

rpm : 250 Rack travel in mm : 6.20...6.40 Del.quantity cm3/: 12.0...18.0 1000 s: (9.0...21.0)

cm3 : 8.00Spread 1000 s: (12.00)

Remarks:

M18

BOSCH INJ. PUMP TEST SPECIFICATIONS Firing order : 1-5-3-6-2-4 Note remarks Test sheet : FIA 13,8 s1 Phasina : 0-60-120-180-240-300 Edition : 10.02.89 Replaces : 4.84 Tolerance + - 0 : 0.50 (0.75) Test oil : ISO-4113 Time to cyl. no. : 1 Combination no. : 0 402 046 227 BASIC SETTING Injection pump Pump designation : PES6P120A820LS249Y 1st speed rpm: 1000 EP type number : 0 412 026 041 Governor Rack travel in mm : 9.10...9.20 Governor design. : RQV300...1000PA204/4 Governer no. : 0 421 813 121 Del.quantity cm3/: 16.6...17.0 Customer-spec. information 100 s: (16.3...17.3) Customer : IVECO-FIAT cm3 : 0.5Spread Engine : 8217.32.110 100 s: (0.9) 1st version kW : 161.8 Rated speed : 2000 2nd speed rpm : 300.0Rack travel in mm: 5.9...6.1 Del.quantity cm3/: 2.2...3.0 TEST BENCH REQUIREMENTS 100 s: (1.9...3.3) Test oil Spread cm3 : 0.6inlet temp. °C : 38...42 100 s: (0.9) Overflow valve (B) Setting of injection pump : 1 417 413 025 with governor Inlet press., bar: 1.50 GUIDE SLEEVE TRAVEL 1st speed rpm : 300 Test nozzle holder : 1.90...2.40 travel mm assembly : 0 681 443 022 2nd speed rpm : 450 : 3.50...4.20 travel mm Opening rpm : 800 3rd speed pressure, bar : 172...175 : 6.30...6.70 travel mm rpm : 1000 4th speed travel mm : 7.80...8.00 Test lines : 1 680 750 060 rpm : 13505th speed : 11.00...12.00 travel mm Outside diameter x Wall thickness GUIDE SLEEVE POSITION x Length mm : 8.00X2.00X1000 Control-lever position Degree: -1 (A) Injection pump setting values rpm.: 1035 Speed Insp. values in parentheses Rack travel in mm : 15.20...17.80 Set equal delivery quant. per values FULL LOAD DELIV. AT FULL LOAD STOP BEGINNING OF DELIVERY 1st version Test pressure, bar: 25...27 Speed rpm : 1000Del.quantity : 166.0...170.0 1000 : (163.0...173.0) Prestroke mm : 2.00...2.10 : (1.95...2.15) : 5.00 Spread cm3 Rack travel in mm : 9.00...12.00 : (9.00) 1000

M19

RATED SPEED

1st version Control Lever

position degrees: 54...62

Testing:

1st rack travel in: 8.10

rpm : 1040...1050 Speed

2nd rack travel in: 4.00

Speed rpm : 1115...1145 4th rack travel in: 1300

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 10...18

Testina:

rpm : 100 Speed Minimum rack trave: 7.50 Speed rpm: 300

Rack travel in mm : 5.90...6.10

CONSTANT REGULATION

Speed rpm : 300...395

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8.10 Speed rpm : 1040...1050 Speed

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

APPLICATION

Rail car

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MB 11,4 L 2 Test sheet Edition : 14.04.89 Replaces : 11.85 Test oil : ISO-4113 Combination no. : 0 402 046 236 Injection pump Pump designation : PES6P110A820LS442 EP type number : 0 412 016 060 Governor Governor design: : RQ300/950PA483R Governer no. : 0 421 801 103 Customer-spec. information Customer : DAIMLER-BENZ Engine : 0M407 1st version kW : 162.0 Rated speed : 1900 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Overflow quantity min. 1/h: 100...120 Test nozzle holder : 0 681 343 009 assembly Opening

pressure, bar

: 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27 Prestroke mm : 3.20...3.30 : (3.15...3.35)

Rack travel in mm : 9.00...12.00 Firing order : 6-2-4-1-5-3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 950

Rack travel in mm : 12.10...12.20

Del.quantity cm3/: 12.2...12.4

100 s: (11.9...12.7)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 300.0 Rack travel in mm : 8.0...8.2 Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.2)

cm3 : 0.4Spread 100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position Degree: -1

Speed rpm : 600

Rack travel in mm : 13.00...14.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm

122.0...124.0 Del.quantity 1000 : (119.0...127.0)

: 4.00 Spread cm3

1000 : (8.00)

RATED SPEED

1st version

Setting point:

Speed rpm Rack travel in mm : 13.5

Testing:

1st rack travel in: 11.10 Speed rpm : 990...1000

2nd rack travel in: 4.00 Speed rpm : 1010...1040 4th rack travel in: 1150 Speed rpm : 0.00...1.50 LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 8.1 Testina: rpm : 100 Speed Minimum rack trave: 9.70 Speed rpm : 300 Rack travel in mm : 8.00...8.20 Rack travel in mm : 2.00 Speed rpm : 410...450 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 600 Del.quantity cm3/: 118.0...122.0 1000 s: (115.0...125.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.10 Speed rpm : 990...1000 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 140.0...160.0 1000 s: (136.0...164.0) Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB 11,4 h : 14.04.89 Edition Replaces : 11.85 Test oil : ISO-4113 Combination no. : 0 402 046 239 Injection pump Pump designation : PES6P110A820LS422 EP type number : 0 412 016 057 Governor Governor design. : RQ300/1100PA327-1 Governer no. : 0 421 801 140 Customer—spec. information Customer : DAIMLER-BENZ Engine : OM 407 H 1st version kW : 147.0 Rated sceed : 2200 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Overflow quantity min. 1/h: 100...120 Test nozzle holder : 0 681 343 009 assembly Openina : 172...175 pressure, bar Test Lines : 1 680 750 015

Outside diameter x Wall thickness : 6.00X1.50X600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10 : (2.95...3.15)
Rack travel in mm : 9.00...12.00 : 6-2-4-1-5-3 Firing order : 0-60-120-180-240-300 Phasina Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 6 BASIC SETTING 1st speed rpm: 1100 Rack travel in mm : 10.60...10.70 Del.quantity cm3/: 10.3...10.5 100 s: (10.0...10.8) cm3 : 0.4Spread 100 s: (0.8) 2nd speed rpm : 300.0 Rack travel in mm : 8.2...8.4 Del.quantity cm3/: 1.4...2.0 100 s: (1.1...2.2) cm3 : 0.4 100 s: (0.7) Spread GUIDE SLEEVE POSITION Control-lever position Degree: -1 Speed rpm : 600 Rack travel in mm : 13.00...14.00 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1100 Del.quantity : 103.0...105.0 1000 : (100.0...108.0) Spread cm3 : 4.00 1000 : (8.00) RATED SPEED 1st version Setting point: Speed rpm Rack travel in mm: 13.5

Testing:

1st rack travel in: 9.60

rpm : 1140...1150 Speed

2nd rack travel in: 4.00 rpm : 1170...1200 Speed 4th rack travel in: 1350 rpm : 0.00...1.50Speed LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 6.1 Testing: Speed rpm: 100
Minimum rack trave: 7.50
Speed rpm: 300
Rack travel in mm: 6.00...6.20
Rack travel in mm: 2.00
Speed rpm: 350...390 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 500
Del.quantity cm3/ : 75.0...79.0
1000 s: (72.0...82.0)
Spread cm3 : 6.00 1000 s: (9.00) RACK STOP ADJUSTMENT Speed rpm : 500 BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 9.60 rpm : 1140...1150 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 130.0...150.0 1000 s: (126.0...154.0) Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB 11,4 L 5 Edition : 29.03.89 Replaces : 12.1.89 Test oil : ISO-4113 : 0 402 046 240 Combination no. Injection pump Pump designation : PES6P110A820LS442 : 0 412 016 060 EP type number Governor Governor design. : RQ300/1100PA327-5 Governer no. : 0 421 801 163 Customer-spec. information Customer : DAIMLER-BENZ Engine : OM 407 1st version kW : 162.0 Rated speed : 2200 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Overflow quantity min. 1/h: 100...120 Test nozzle holder assembly : 0 681 343 009 Openina . : 172...175 pressure, bar : 1 680 750 015

Test lines

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27 Prestroke mm : 3.20...3.30 (3.15...3.35) Rack travel in mm : 9.00...12.00 Firing order : 6-2-4-1-5-3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 10.90...11.00

Del.quantity cm3/: 11.3...11.5

100 s: (11.0...11.8)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 300.0Rack travel in mm: 8.2...8.4 Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.2) cm3 : 0.4

Spread 100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 Speed rpm : 600

Rack travel in mm : 13.00...14.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

: 113.0...115.0 Del.quantity 1000 : (110.0...118.0)

: 4.00 cm3

Spread 1000 : (8.00)

RATED SPEED

1st version

Setting point:

Speed rom Rack travel in mm: 13.5

Testing:

1st rack travel in: 9.90

rpm : 1140...1150 Speed

2nd rack travel in: 4.00 rpm : 1190...1220 Speed 4th rack travel in: 1350 Speed rpm : 0.00...1.50 LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 7.4 Testing: : 100 Speed rpm Minimum rack trave: 9.00 Speed rpm : 300
Rack travel in mm : 7.30...7.50
Rack travel in mm : 2.00
Speed rpm : 365...405 FUEL DELIVERY CHARACTERISTICS 1st version Speed : 600 rpm Del.quantity cm3/: 90.0...94.0 1000 s: (87.0...97.0) Spread cm3 : 6.001000 s: (9.00) RACK STOP ADJUSTMENT Speed rom : 500

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.90

Speed rpm : 1140...1150

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 130.0...150.0 1000 s: (126.0...154.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 3.00...3.10 : (2.95...3.15) Rack travel in mm : 9.00...12.00 Note remarks : 6-2-4-1-5-3 Firing order : MB 11,4 h 1 Test sheet Edition : 14.04.89 Replaces : 11.85 Test oil : ISO-4113 Phasina : 0-60-120-180-240-300 Combination no. : 0 402 046 243 Tolerance + - 0 : 0.50 (0.75) Injection pump Time to cyl. no. : 6 Pump designation : PES6P110A820LS422 EP type number : 0 412 016 057 BASIC SETTING Governor Governor design. : RQ300/950PA483-1 rpm: 950 1st speed : 0 421 801 185 Governer no. Rack travel in mm : 11.00...11.10 Customer-spec. information Customer : DAIMLER-BENZ Del.quantity cm3/: 10.2...10.4 100 s: (9.9...10.7) Engine : OM 407 1st version kW : 137.0 Spread cm3 : 0.4Rated speed : 1900 100 s: (0.8) TEST BENCH REQUIREMENTS 2nd speed rpm : 300.0 Rack travel in mm : 7.8...8.0 Test oil inlet temp. °C : 38...42 Del.quantity cm3/: 1.4...2.0 100 s: (1.1...2.2) cm3 : 0.4 100 s: (0.7) Overflow valve Spread : 1 497 413 025 Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Control-lever position Overflow Degree: -2 quantity min. 1/h: 100...120 rpm : 600 Speed Rack travel in mm : 13.00...13.80 Test nozzle holder assembly : 0 681 343 009 FULL LOAD DELIV. AT FULL LOAD STOP Openina 1st version pressure, bar : 172...175 rpm : 950 Speed : 102.0...104.0 Del.quantity 1000 : (99.0...107.0) Test lines : 1 680 750 015 : 4.00 Spread cm3 1000 : (8.00) Outside diameter x Wall thickness RATED SPEED : 6.00x1.50x600 x Length mm 1st version (A) Injection pump setting values Insp. values in parentheses Setting point: Set equal delivery quant. Speed per values Rack travel in mm: 13.4

Testing:

Speed

1st rack travel in: 10.00

rpm : 990...1000

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

2nd rack travel in: 4.00 rpm : 1010...1040 Speed 4th rack travel in: 1150 rpm : 0.00...1.50 Speed LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 7.9 Testing: Speed rpm : 100 Minimum rack trave: 9.50 Speed rpm: 300
Rack travel in mm: 7.80...8.00
Rack travel in mm: 2.00
Speed rpm: 375...415 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 600 Del.quantity cm3/ : 93.0...97.0 1000 s: (90.0...100.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.00 Speed rpm : 990...1000 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 135.0...155.0 1000 s: (131.0...159.0) Remarks: APPLICATION **Omnibus**

Note remarks

Test sheet : RVI 8,8 b 2
Edition : 29.03.89
Replaces : 12.11.87
Test oil : ISO-4113

Combination no. : 0 402 046 247

Injection pump

Pump designation : PES6P120A320RS417 EP type number : 0 412 026 036

Governor

Governor design. : RQV300...1150PA527-1

Governer no. : 0 421 815 165

Customer—spec. information Customer : RVI

Engine : MIDR 062030

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Open in a

pressure, bar : 207...210

Orifice plate

diameter mm : 0.8

Test Lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1150

Rack travel in mm : 8.50...8.60

Del.quantity cm3/: 14.4...14.6

100 s: (14.1...14.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 600.0 Rack travel in mm : 5.2...5.4 Del.quantity cm3/ : 1.8...2.4

100 s: (1.5...2.7)

Spread cm3 : 0.8 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.70...2.10

2nd speed rpm: 900

travel mm : 5.80...6.20

3rd speed rpm : 1150

travel mm : 8.00...8.20

GUIDE SLEEVE POSITION Control-lever position Degree: -1

Speed rpm: 1190

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1150

Del.quantity : 144.0...146.0

1000 : (141.0...149.0)

Spread cm3 : 5.00 1000 : (9.00)

RATED SPEED

1st version

NO1

Control lever position degrees: 52...60 Testina: 1st rack travel in: 7.50 Speed rpm : 1205...1215 2nd rack travel in: 4.00 Speed rpm : 1260...1290 4th rack travel in: 1450 Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 62...70 Testina: rpm : 100 Speed Minimum rack trave: 6.30 Speed rpm : 300 Rack travel in mm : 3.30...3.50 Rack travel in mm: 2.00 CONSTANT REGULATION rpm : 320...440 Speed TORQUE CONTROL Dimension a mm : 1.80 Torque control curve - 1st version 1st speed rpm : 1150 Rack travel in m: 8.50...8.60 2nd speed rpm : 750 Rack travel in m: 7.60...7.70 3rd speed rpm : 500 Rack travel in m: 7.00...7.20 rpm : 350 4th speed Rack travel in m: 6.70...7.10 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version rpm : 750 Speed Del.quantity cm3/: 122.0...128.0 1000 s: (119.0...131.0) rpm : 500 Speed Del.quantity cm3/: 69.0...75.0 1000 s: (66.0...78.0) BREAKAWAY

1st version

Speed

NO2

1mm rack travel less than

full load rack tr: 7.50

rpm : 1205...1215

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 140.0...160.0 1000 s: (136.0...164.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 3.30...3.50
Del.quantity cm3/: 18.0...24.0
1000 s: (15.0...27.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

Start-of-delivery mark 6° cam angle after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 3.00...3.10 : (2.95...3.15) Rack travel in mm : 9.00...12.00 Note remarks : 6-2-4-1-5-3 Firing order Test sheet : MB 11,4 h 2 Edition : 14.04.89 Replaces : 11.85 : ISO-4113 Test oil Phasing : 0-60-120-180-240-300 Combination no. : 0 402 046 269 Tolerance + - 0 : 0.50 (0.75) Injection pump Time to cyl. no. : 6 Pump designation : PES6P110A820LS422 EP type number : 0 412 016 057 BASIC SETTING Governor Governor design. : RQ300/1100PA681 1st speed rpm: 1100 : 0 421 801 222 Governer no. Rack travel in mm : 10.60...10.70 Customer-spec. information Customer : DAIMLER-BENZ Del.quantity cm3/: 10.3...10.5 Engine : OM 407 100 s: (10.0...10.8) 1st version kW : 147.0 Spread cm3 : 0.4: 2200 Rated speed 100 s: (0.8) TEST BENCH REQUIREMENTS rpm : 300.02nd speed Test oil Rack travel in mm: 8.0...8.2 inlet temp. °C : 38...42 Del.quantity cm3/: 1.4...2.0 100 s: (1.1...2.2) cm3 : 0.4 100 s: (0.7) Overflow valve Spread : 1 417 413 025 Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Control-lever position Overflow Degree: -1 quantity min. 1/h: 100...120 rpm : 600 Speed Rack travel in mm : 13.00...14.00 Test nozzle holder : 0 681 343 009 FULL LOAD DELIV. AT FULL LOAD STOP assembly **Opening** 1st version : 172...175 pressure, bar rpm : 1100 Speed Del.quantity : 103.0...105.0 1000 : (100.0...108.0) cm3 : 4.00 1000 : (8.00) Test lines : 1 680 750 015 Spread Outside diameter x Wall thickness RATED SPEED : 6.00X1.50X600 x Length mm 1st version (A) Injection pump setting values Insp. values in parentheses Setting point: Set equal delivery quant. Speed rpm Rack travel in mm: 13.5 per values ____ BEGINNING OF DELIVERY Testing: Test pressure, bar: 25...27 1st rack travel in: 9.60

rpm : 1140...1150

2nd rack travel in: 4.00 rpm : 1175...1205 Speed 4th rack travel in: 1350 Speed rpm : 0.00...1.50 LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 6.1 Testing: Speed rpm : 100 Minimum rack trave: 7.50 Speed rpm : 300 Rack travel in mm : 6.00...6.20 Rack travel in mm: 2.00 : 350...390 Speed rpm FUEL DELIVERY CHARACTERISTICS 1st version Speed : 500 rpm Del.quantity cm3/: 76.0...80.0 1000 s: (73.0...83.0) Spread cm3 : 6.001000 s: (9.00) RACK STOP ADJUSTMENT Speed rpm : 500 BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 9.60 Speed rpm : 1140...1150 STARTING FUEL DELIVERY rpm_ : 100 Speed Del.quantity cm3/: 130.0...150.0 1000 s: (126.0...154.0)

Remarks:

APPLICATION

Omnibus

Note remarks

Test sheet : MAN 11,4 f Edition : 29.03.89 Replaces : 11.85

Test oil : ISO-4113

Combination no. : 0 402 046 287

Injection pump

Pump designation : PES6P100A720LS471 EP type number : 0 412 006 034

Governor

Governor design. : RQ250/1100PA685 Governer no. : 0 421 801 227

Customer—spec. information Customer : MAN

Engine : D2566UH/200

1st version kW : 147.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening |

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.10...3.20

: (3.05...3.25) Rack travel in mm : 9.00...12.00

N₀5

Firing order : 6-2-4-1-5-3

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 750

Rack travel in mm : 12.30...12.40

Del.quantity cm3/: 9.4...9.6

100 s: (9.2...9.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0 Rack travel in mm : 4.9...5.1 Del.quantity cm3/ : 1.2...1.8

100 s: (0.9...2.0)

Spread cm3 : 0.3 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 750

Del.quantity : 94.0...96.0 1000 : (92.0...98.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600 Rack travel in mm : 16.0

Testing:

1st rack travel in: 11.20

Speed rpm : 1145...1160

2nd rack travel in: 4.00

Speed rpm : 1215...1245

4th rack travel in: 1350

Speed rpm : 0.00...1.00LOW IDLE 1 Setting point w/out bumper spring rpm : 250 Rack travel in mm: 5.0 Testing: Speed : 100 rpm Minimum rack trave: 6.50 : 250 Speed rpm Rack travel in mm : 4.90...5.10 Rack travel in mm : 2.00 rpm : 340...380 Speed TORQUE CONTROL Dimension a mm Torque control curve - 1st version 1st speed rpm : 700 Rack travel in m: 12.30...12.40 2nd speed rpm : 1100 Rack travel in m: 12.20...12.40 FUEL DELIVERY CHARACTERISTICS 1st version : 500 Speed rpm Del.quantity cm3/: 85.0...88.0 1000 s: (82.5...90.5) : 1100 Speed rpm Del.quantity cm3/: 100.0...104.0 1000 s: (97.5...106.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.20 rpm : 1145...1160 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 115.0...135.0 1000 s: (111.0...139.0) LOW IDLE rpm : 250 Speed Rack travel in mm : 4.90...5.10 Del.quantity cm3/ : 12.0...18.0 1000 s: (9.5...20.5) cm3 : 3.50Spread 1000 s: (5.50)

APPLICATION

Omnibus

N06

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS : 3.20...3.30 Prestroke mm : (3.15...3.35) Note remarks Rack travel in mm : 9.00...12.00 Firing order : 6-2-4-1-5-3 Test sheet : MB 11,4 L 9 : 14.04.89 Edition : 11.85 Replaces : ISO-4113 Test oil Phasing : 0-60-120-180-240-300 Combination no. : 0 402 046 298 Tolerance + - 0 : 0.50 (0.75) Injection pump Time to cyl. no. : 6 Pump designation : PES6P110A820LS442 : 0 412 016 060 EP type number BASIC SETTING Governor : RQ250/1100PA327-8 Governor design. 1st speed rpm: 1100 Governer no. : 0 421 801 256 Rack travel in mm : 10.90...11.00 Customer-spec. information Customer : DAIMLER-BENZ Del.quantity cm3/: 11.3...11.5 Engine : 407 STEHEND 100 s: (11.0...11.7) 1st version kW : 162.0 Spread cm3 : 0.4Rated speed : 2200 100 s: (0.8) TEST BENCH REQUIREMENTS rpm : 250.0 2nd speed Test oil Rack travel in mm: 8.0...8.2 Del.quantity cm3/: 1.2...1.8 100 s: (0.9...2.0) inlet temp. °C : 38...42 Overflow valve Spread cm3 : 0.4: 1 417 413 025 100 s: (0.7) Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Control-lever position Degree: -1 Speed rpm : 550 Rack travel in mm : 13.00...14.00 Overflow quantity min. 1/h: 100...120 Test nozzle holder : 0 681 343 039 assembly FULL LOAD DELIV. AT FULL LOAD STOP Openina 1st version pressure, bar : 172...175 rpm : 1100 Speed : 113.0...115.0 Del.quantity 1000 : (110.5...117.5) Test lines : 1 680 750 015 : 4.00 Spread cm3 1000 : (8.00) Outside diameter x Wall thickness RATED SPEED x Length mm : 6.00x1.50x600 1st version (A) Injection pump setting values Insp. values in parentheses Setting point: Speed rpm : 550 Rack travel in mm : 13.5 Set equal delivery quant. per values BEGINNING OF DELIVERY Testing:

1st rack travel in: 9.90

rpm : 1140...1150

Speed

Test pressure, bar: 25...27

2nd rack travel in: 4.00 Speed rpm : 1175...1205 4th rack travel in: 1300

Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 250 Rack travel in mm : 7.6

Testing:

Speed : 100 rpm Minimum rack trave: 9.00 rpm : 250

Rack travel in mm : 7.50...7.70

Rack travel in mm : 2.00 Speed rpm : 330...370

FUEL DELIVERY CHARACTERISTICS

1st version

: 600 Speed rpm

Del.quantity cm3/: 90.0...94.0 1000 s: (87.0...97.0)

Spread cm3 : 6.00

1000 s: (9.00)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.90

Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 130.0...150.0 1000 s: (126.0...154.0)

:

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MB 11,4 L19 Test sheet : 14.04.89 Edition : 19.5.88 Replaces Test oil : ISO-4113 Combination no. : 0 402 046 299 Injection pump Pump designation : PES6P110A820LS442 EP type number : 0 412 016 060 Governor Governor design. : RQ250/950PA483-3 : 0 421 801 363 Governer no. Customer-spec, information Customer : DAIMLER-BENZ Engine : 0M407 1st version kW : 147.0 : 1900 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Overflow quantity min. 1/h: 100...120 Test nozzle holder : 0 681 343 009 assembly **Opening** pressure, bar : 172...175 Test lines : 1 680 750 015 Outside diameter

x Wall thickness x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30 : (3.15...3.35) Rack travel in mm : 9.00...12.00 Firing order : 6-2-4-1-5-3

Phasina : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 950

Rack travel in mm : 11.40...11.50

Del.guantity cm3/: 11.0...11.2

100 s: (10.7...11.5)

cm3 : 0.4Spread

100 s: (0.8)

2nd speed rpm : 250.0 Rack travel in mm: 8.4...8.6 Del.quantity cm3/: 1.4...2.0 100 s: (1.1...2.2)

Spread cm3 : 0.4100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 Speed rpm : 600

Rack travel in mm : 13.00...14.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 950

: 110.0...112.0 Del.quantity 1000 : (107.0...115.0)

: 4.00 Spread cm3

1000 : (8.00)

RATED SPEED

1st version

Setting point:

Speed : 600 rom Rack travel in mm : 13.5

Testing:

1st rack travel in: 10.40 Speed rpm : 990...1000 2nd rack travel in: 4.00

Speed rpm : 1035...1065 4th rack travel in: 1150

rpm : 0.00...1.00 Speed

LOW IDLE 1

Setting point w/out bumper spring Speed rpm : 250 Rack travel in mm : 8.1

Testing:

rpm : 100 Speed Minimum rack trave: 9.70 Speed rpm : 250
Rack travel in mm : 8.00...8.20
Rack travel in mm : 2.00

Speed rpm : 330...370

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600 Del.quantity cm3/: 97.0...101.0 1000 s: (94.0...104.0)

Spread cm3 : 6.00

1000 s: (9.00)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.40

rpm : 990...1000 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0)

Remarks:

Test sheet Edition

Note remarks

: MAN 11,1q31 : 09.03.87

Replaces

Test oil

: ISO-4113

Combination no.

: 0 402 046 322

Injection pump

Pump designation : PES6P110A720LS375 EP type number : 0 412 016 053

Governor

Governor design. : RQ250/1100PA658-17

Governer no.

: 0 421 801 309

Customer-spec. information Customer : MAN

Engine

: D2566 MTUH

1st version kW

Rated speed

: 195.0 : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values _

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 3.00...3.10 : (2.95...3.15)

Rack travel in mm : 9.00...12.00

N11

Firing order : 6-2-4-1-5-3

Phasing

: 0-60-120-180-240-300

Tolerance + - 0

: 0.50 (0.75)

Time to cyl. no.

BASIC SETTING

1st speed

rpm: 1100

: 6

Rack travel in mm : 11.70...11.80

Del.quantity cm3/: 14.3...14.5

100 s: (14.0...14.7)

Spread

cm3 : 0.4

100 s: (0.7)

2nd speed

rpm : 250.0Rack travel in mm: 6.9...7.1

Del.quantity cm3/: 1.0...1.6

100 s: (0.7...1.8)

Spread

cm3 : 0.4 100 s: (0.7)

GUIDE SLEEVE POSITION

Control—lever position

Degree: -2

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1100

Aneroid P. Del.quantity 1000 Aneroid pressure h: 700

: 143.0...145.0

: (140.5...147.5)

Spread

: 4.00 cm3

1000 : (7.50)

RATED SPEED

1st version

Setting point: Speed

: 600 rpm

Rack travel in mm: 20.0

Testing:

1st rack travel in: 11.70 Speed rpm : 1145...1160

2nd rack travel in: 4.00

rpm : 1185...1215

Speed

4th rack travel in: 1350 rpm : 0.00...1.00Speed LOW IDLE 1 Setting point w/out bumper spring : 250 rpm Rack travel in mm: 7.0 Testing: rpm : 100 Speed Minimum rack trave: 8.50 rpm : 250 Speed Rack travel in mm : 6.90...7.10 Rack travel in mm : 2.00 Speed : 360...400 rpm TORQUE CONTROL Dimension a mm : 0.40 Torque control curve - 1st version rpm : 700 1st speed Rack travel in m: 12.70...12.90 2nd speed rom : 1100 Rack travel in m: 11.70...11.80 3rd speed rpm : 810 Rack travel in m: 12.50...12.70 : 950 4th speed rpm Rack travel in m: 12.00...12.20 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rom hPa : 700 Pressure : 12.60...12.70 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 10.80...10.90 2nd pressure hPa : 200 Rack travel in m: 11.40...11.50 3rd pressure hPa : 310 Rack travel in m: 11.90...12.30 START CUT-OUT 1/min: 170 (190) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 rpm : 700 Speed Del.quantity cm3/: 156.0...160.0 1000 s: (153.0...163.0)

Aneroid pressure h: 200 rpm : 500 Speed Del.quantity cm3/: 123.0...127.0 1000 s: (120.0...130.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 112.0...114.0 1000 s: (109.5...116.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.70 rpm : 1145...1160 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed Del.quantity cm3/: 225.0...245.0 1000 s: (221.0...249.0)

LOW IDLE

Speed rpm : 250 Rack travel in mm : 6.90...7.10 Del.quantity cm3/: 10.0...16.0 1000 s: (7.5...18.5) cm3 : 4.50Spread

1000 s: (7.50)

Remarks:

: MAN-NR. 2-7588

APPLICATION

Omnibus

M12

Note remarks

Test sheet : MB 11,4 L13 Edition : 14.04.89

Replaces : 10.85 Test oil : ISO-4113

Combination no. : 0 402 046 324

Injection pump

Pump designation : PES6P110A820LS442

EP type number : 0 412 016 060

Governor

Governor design. : RQ300/1100PA327-9

Governer no. : 0 421 801 327

Customer-spec. information

Customer : DAIMLER-BENZ

: OM 407 STEHEND Engine

1st version kW : 162.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.20...3.30 : (3.15...3.35) Prestroke mm

Rack travel in mm : 9.00...12.00

Firing order : 6-2-4-1-5-3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.00...11.10

Del.quantity cm3/: 11.3...11.5

100 s: (11.0...11.7)

cm3 : 0.4Spread

100 s: (0.8)

rpm : 300.02nd speed

Rack travel in mm: 8.1...8.3 Del.quantity cm3/: 1.2...1.8

100 s: (0.9...2.0)

cm3 : 0.4

Spread 100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 600 Speed

Rack travel in mm : 13.00...14.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 113.0...115.0

1000 : (110.5...117.5)

: 4.00 Spread cm3

1000 : (8.00)

RATED SPEED

1st version

Setting point:

rpm Rack travel in mm: 13.5

Testing:

1st rack travel in: 10.00 Speed rpm : 1140...1150

2nd rack travel in: 4.00

rpm : 1175...1205 Speed

4th rack travel in: 1300 rpm : 0.00...1.50 Speed

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300 Rack travel in mm : 8.2

Testing:

Speed rpm : 100 Minimum rack trave: 9.50

Speed rpm : 300 Rack travel in mm : 8.10...8.30

Rack travel in mm : 2.00 Speed rpm : 375...415

FUEL DELIVERY CHARACTERISTICS

1st version

Speed : 600 rpm

Del.quantity cm3/: 88.0...92.0 1000 s: (85.0...95.0)

Spread cm3 : 6.00

1000 s: (9.00)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.00

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 130.0...150.0 1000 s: (126.0...154.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 2.80...2.90 : (2.75...2.95) Rack travel in mm : 9.00...12.00 Note remarks : 1-5-3-6-2-4 Firing order Test sheet : RVI 8,8 d 5 Edition : 29.03.89 : 12.12.86 Replaces Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 402 046 328 Tolerance + - 0 : 0.50 (0.75) Injection pump BEGINNING OF DELIVERY DIFFERENCE Pump designation : PES6P120A320RS419-2 : 0 412 026 048 EP type number betw. rack trav. m: 10.00...11.00 Governor Governor design. : RQ275/950PA753-1 BASIC SETTING : 0 421 801 377 Governer no. 1st speed rpm : 500 Customer-spec. information Customer Rack travel in mm : 8.70...8.80 : RVI Engine : MIDS/PS062045 FC Del.quantity cm3/: 11.7...11.9 : 144.0 1st version kW 100 s: (11.4...12.2) Rated speed : 1900 Spread cm3 : 0.5TEST BENCH REQUIREMENTS 100 s: (0.9) Test oil inlet temp. °C : 38...42 rpm : 275.0 2nd speed Rack travel in mm: 4.9...5.1 Overflow valve Del.quantity cm3/: 1.7...2.3 : 1 417 413 025 100 s: (1.4...2.6) Spread cm3 : 0.8Inlet press., bar: 1.50 100 s: (1.2) Test nozzle holder GUIDE SLEEVE POSITION : 1 688 901 019 assembly Control-lever position Degree: -2 rpm : 525 Opening pressure, bar : 207...210 Orifice plate FULL LOAD DELIV. AT FULL LOAD STOP diameter mm : 0,8

Rack travel in mm : 19.20...20.80

1st version Speed rom : 500 Aneroid pressure h: 700 Del.quantity : 117.0...119.0 1000 : (114.0...122.0) : 5.00 Spread cm3 : (9.00) 1000

RATED SPEED

1st version

Setting point:

Speed rpm : 525 Rack travel in mm : 20.0

Test Lines

: 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Testina:

1st rack travel in: 7.20

rpm : 1015...1030 Speed

2nd rack travel in: 4.00

Speed rpm : 1150...1080 4th rack travel in: 1300

Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 275 Rack travel in mm : 3.5

Testing:

rpm : 200 Speed Minimum rack trave: 5.30 Speed rpm : 275 Rack travel in mm : 3.40...3.60 Rack travel in mm : 2.00

rpm : 300...340 Speed

TORQUE CONTROL

Dimension a mm :?

Torque control curve - 1st version

1st speed rpm : 500

Rack travel in m: 8.70...8.80

2nd speed rpm : 950

Rack travel in m: 8.00...8.20

3rd speed rpm : 750

Rack travel in m: 8.30...8.50

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rpm hPa : 700 Pressure

Rack travel mm : 8.70...8.80

Measurement

Speed 1/min: 500

1st pressure hPa : -

Rack travel in m: 7.90...8.00

2nd pressure hPa : 245

Rack travel in m: 8.50...8.60

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700 Speed rom : 950 Del.quantity cm3/: 136.0...140.0 1000 s: (133.0...143.0)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 101.0...103.0

1000 s: (98.0...106.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 7.20

rpm : 1015...1030 Speed

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0)

LOW IDLE

Speed rpm : 275 Rack travel in mm : 3.40...3.60

Remarks:

Start-of-delivery mark 9.5° cam angle

after start of delivery cyl. 1

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS : 2.80...2.90 : (2.75...2.95) Prestroke mm Note remarks Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order Test sheet : RVI 8,8 d 6 Edition : 29.03.89 Replaces : 12.12.86 Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 402 046 329 Tolerance + - 0 : 0.50 (0.75) Injection pump BASIC SETTING Pump designation : PES6P120A320RS419-2 EP type number : 0 412 026 048 1st speed rpm : 500 Governor Governor design: RQ275/950PA843 Rack travel in mm : 8.00...8.10 : 0 421 801 378 Governer no. Del.quantity cm3/: 10.4...10.6 Customer-spec. information Customer : RVI 100 s: (10.1...10.9) Engine : MIDS/PS062045D/A cm3 : 0.5Spread 1st version kW : 129.0 100 s: (0.9) Rated speed : 1900 rpm : 275.0 2nd speed Rack travel in mm : 4.2...4.4 Del.quantity cm3/ : 1.7...2.3 100 s: (1.4...2.6) TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 cm3 : 0.8Spread 100 s: (1.2) Overflow valve : 1 417 413 025 GUIDE SLEEVE POSITION Control-lever position Inlet press., bar: 1.50 Degree: -2 Speed rpm : 525 Rack travel in mm : 19.20...20.80 Test nozzle holder assembly : 1 688 901 019 FULL LOAD DELIV. AT FULL LOAD STOP Opening pressure, bar : 207...210 1st version : 500 Speed rpm : 104.0...106.0 Orifice plate Del.quantity 1000 diameter mm : 0,8 : (101.0...109.0) Spread cm3 : 5.00 1000 : (9.00) Test Lines : 1 680 750 067 RATED SPEED Outside diameter x Wall thickness 1st version x Length mm : 6.00X1.50X1000 Setting point: (A) Injection pump setting values Speed rpm Insp. values in parentheses Rack travel in mm: 20.0

Testing:

Speed

Speed

1st rack travel in: 7.00

2nd rack travel in: 4.00

rpm : 1015...1030

rpm : 1040...1070

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

4th rack travel in: 1300

rpm : 0.00...1.00Speed

LOW IDLE 1

Setting point w/out bumper spring

rpm : 275 Rack travel in mm: 3.6

Testina:

Speed rpm : 200 Minimum rack trave: 5.20 Speed rpm: 275

Rack travel in mm : 3.50...3.70
Rack travel in mm : 2.00
Speed rpm : 300...340

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

1st speed rpm : 500

Rack travel in m: 8.00...8.10

2nd speed rpm : 950 Rack travel in m: 7.40...7.50

3rd speed rpm : 775

Rack travel in m: 7.60...7.80

START CUT-OUT

Speed 1/min : 210 (230)

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 950 Speed

Del.quantity cm3/: 124.0...128.0

1000 s: (121.0...131.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 7.00

rpm : 1015...1030 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0)

LOW IDLE

Speed rpm : 275 Rack travel in mm : 3.50...3.70

Remarks:

M18

Start-of-delivery mark 9.5° cam angle after start of delivery cyl. 1

APPLICATION

Omnibus

Note remarks

Test sheet Edition

: RVI 9,8 a 7 : 29.03.89

Replaces

: 5.8.88

Test oil

: ISO-4113

Combination no. : 0 402 046 330

Injection pump

Pump designation : PES6P120A320RS419-2

EP type number

: 0 412 026 048

Governor

Governor design. : RQ275/1050PA844

Governer no.

: 0 421 801 379

Customer-spec. information Customer

: RVI

Engine

: MIPS062045B

1st version kW

: 176.0

Rated speed

: 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines

: 1 680 750 067

Outside diameter

x Wall thickness

x Length mm

: 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 9.20...9.30

Del.quantity cm3/: 16.0...16.2

100 s: (15.7...16.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0Rack travel in mm : 3.5...3.7 Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

cm3 : 0.8Spread 100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed Aneroid pressure h: 700

: 160.0...162.0 Del.quantity 1000 : (157.0...165.0)

: 5.00 cm3 Spread

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed : 600 rpm Rack travel in mm: 20.0

Testing:

1st rack travel in: 8.20

rpm : 1105...1120

2nd rack travel in: 4.00

Speed rpm : 1170...1200 4th rack travel in: 1300

Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

rpm : 275° Rack travel in mm: 3.6

Testing:

rpm : 200 Speed Minimum rack trave: 5.50

Speed rpm: 275
Rack travel in mm: 3.50...3.70
Rack travel in mm: 2.00

rpm : 310...350 Speed

TORQUE CONTROL

Dimension a mm : -

Torque control curve - 1st version

1st speed rpm : 1050 Rack travel in m: 9.70...9.80

2nd speed rpm : 700

Rack travel in m: 9.70...9.90

Aneroid/Altitude Compensator Test

1st version

Setting

rpm : 500 hPa : 700 Speed rpm Pressure

Rack travel mm : 9.20...9.30

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 8.10...8.30

2nd pressure hPa : 260

Rack travel in m: 8.90...9.00

3rd pressure hPa : 230

Rack travel in m: 8.40...8.60

START CUT-OUT

Speed 1/min: 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700 Speed rpm : 700

Del.quantity cm3/: 148.0...154.0 1000 s: (145.0...157.0)

Aneroid pressure h: -

rom : 500 Speed

Del.quantity cm3/: 103.0...105.0

1000 s: (100.0...108.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8.20

rpm : 1105...1120 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0)

LOW IDLE

rpm : 275

Rack travel in mm : 3.50...3.70

Remarks:

Start-of-delivery mark 9.5° cam angle

after start of delivery cyl. 1

APPLICATION

Omnibus

Note remarks

Test sheet

: MAN 11,9 L

Edition Replaces Test oil : 07.04.89 : 26.8.88 : ISO-4113

Combination no.

: 0 402 046 336

Injection pump

Pump designation : PES6P120A720RS517

EP type number

: 0 412 026 054

Governor

Governor design. : RQ75DPA895

Governer no. : 0 421 801 447

Customer

Customer-spec. information : MAN

Engine

: D2866TUE

1st version kW

Rated speed

: 190.0

: 1500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 1 688 901 019

Opening

pressure, bar

: 207...210

Orifice plate

diameter mm

: 0,8

Test lines

: 1 680 750 067

Outside diameter

x Wall thickness

x Length mm

: 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order

: 6-2-4-1-5-3

Phasina

: 0-60-120-180-240-300

Tolerance + - °

: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed

rpm: 700

Rack travel in mm : 11.80...11.90

Del.quantity cm3/: 21.0...21.2

100 s: (20.7...21.5)

Spread

cm3 : 0.5

100 s: (0.9)

2nd speed

rpm : 400.0

Rack travel in mm: 4.4...4.6

Del.quantity cm3/: 1.2...1.8 100 s: (0.9...2.1)

cm3 : 0.8

Spread

100 s: (1.2)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 700

Del.quantity

: 210.0...212.0 1000 : (207.0...215.0)

Spread

: 5.00 cm3

1000 : (9.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 10.80

rpm : 750...755 Speed

2nd rack travel in: 4.00 Speed rom

STARTING FUEL DELIVERY

: 788...801

Speed

4th rack travel in: 900

: 0.00...1.00 rom

Speed

rpm

: 100

N21

Del.quantity cm3/: 150.0...170.0 1000 s: (146.0...174.0)

Remarks:

APPLICATION

Generator

Note remarks

Test sheet Edition

: RVI 9,8 g : 29.03.89

Replaces

Test oil

: ISO-4113

Combination no.

: 0 402 046 337

Injection pump

Pump designation : PES6P120A320RS520

EP type number

: 0 412 026 056

Governor

Governor design. Governer no.

: RQV275...1050PA906

: 0 421 813 724

Customer-spec. information Customer

: RVI

Engine

: MIDRO62045D

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening |

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 2.80...2.90

: (2.75...2.95)

Rack trayel in mm : 9.00...12.00

N23

Firing order : 1-5-3-6-2-4

Phasina

: 0-60-120-180-240-300

Tolerance + - °

: 0.50 (0.75)

BASIC SETTING

1st speed

rpm: 1050

Rack travel in mm : 10.30...10.40

Del.quantity cm3/: 18.8...19.0

100 s: (18.5...19.3)

Spread

cm3 : 0.5

100 s: (0.9)

rpm : 275.0 2nd speed

Rack travel in mm : 4.9...5.1 Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread

cm3 : 0.8100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed

travel mm : 1.00...1.20

2nd speed : 450 rpm

: 3.30...3.80 travel mm

3rd speed : 800 rpm

: 5.70...6.00 travel mm : 1050 4th speed

rpm travel mm : 7.60...7.80

GUIDE SLEEVE POSITION Control-lever position Degree: -1

rpm : 1130

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Spread

Speed : 1050 rpm

Del.quantity : 188.0...190.0

1000

: (185.0...193.0)

: 5.00 cm3

1000

: (9.00)

RATED SPEED

1st version

Control Lever

position degrees: 61...69

Testing:

1st rack travel in: 9.30

Speed rpm : 1110...1120 2nd rack travel in: 4.00

rom : 1185...1215 Speed

4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 6...14

Testina:

Speed rpm : 200 Minimum rack trave: 5.50 Speed rpm : 275

Rack travel in mm : 4.10...4.30

CONSTANT REGULATION

Speed rpm : 275...390

Aneroid/Altitude Compensator Test

1st version

Setting

rom : 500 hPa : 700 Speed rpm Pressure

Rack travel mm : 10.30...10.40

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 8.10...8.20

2nd pressure hPa : 360

Rack travel in m: 9.70...9.80

3rd pressure hPa : 160

Rack travel in m: 8.50...8.80

START CUT-OUT

1/min: 195 (215) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 650 Speed

Del.quantity cm3/: 171.0...177.0

1000 s: (168.0...180.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 102.0...104.0

1000 s: (99.0...107.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.30

Speed rpm : 1110...1120

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0)

LOW IDLE

Speed rpm : 275

Rack travel in mm : 4.10...4.30

Remarks:

Start-of-delivery mark 9.5° cam angle

after start of delivery cyl. 1

Note remarks

: MB 11,4 i 2 : 29.03.89 : 2.84 Test sheet Edition Replaces

Test oil : ISO-4113

Combination no. : 0 402 046 725

Injection pump

Pump designation : PES6P120A820LS3077-

10

EP type number : 0 412 026 714

Governor

Governor design. : RQ300/1100PA606-2

Governer no. : 0 421 801 249

Customer-spec. information

Customer : DAIMLER-BENZ

Engine : 0M407A

: 206.0 1st version kW : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 019

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values _

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.00...4.10 Prestroke mm

: (3.95...4.15)

Rack travel in mm : 9.00...12.00 Firing order

: 6-2-4-1-5-3

Phasina : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 11.00...11.10

Del.quantity cm3/: 16.5...16.7

100 s: (16.2...17.0)

Spread cm3 : 0.5

100 s: (0.9)

rom : 300.02nd speed Rack travel in mm: 5.0...5.2

Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.3) cm3 : 0.8 Spread

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2 rpm : 650

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100 Aneroid pressure h: 700

Del.quantity : 165.0...167.0

1000 : (-)

Spread cm3 : 5.00

1000 : (-)

RATED SPEED

1st version

Setting point:

Speed : 650 man

N25

Speed rpm : 600 Del.quantity cm3/ : 178.5...181.5 Rack travel in mm: 20.0 Testing: 1000 s: (-) 1st rack travel in: 10.00 Spread cm3 : 8.00rpm : 1145...1160 Speed 1000 s: (-) 2nd rack travel in: 4.00 Aneroid pressure h: rpm : 1190...1220 Speed rpm : 500 Del.quantity cm3/ : 144.0...146.0 Speed 4th rack travel in: 1300 rpm : 0.00...1.50Speed 1000 s: (-) cm3 : 8.00 Spread LOW IDLE 1 1000 s: (-) Setting point w/out bumper spring rpm : 300 Rack travel in mm: 5.1 **BREAKAWAY** Testing: 1st version : 100 Speed rpm 1mm rack travel less than Minimum rack trave: 6.50 Speed : 300 full load rack tr: 10.00 CDM Rack travel in mm : 5.00...5.20 Rack travel in mm : 2.00 Speed rpm : 380...420 rpm : 1145...1160 Speed STARTING FUEL DELIVERY TORQUE CONTROL Dimension a mm :? : 100 Speed rpm Del.quantity cm3/: 150.0...170.0 1000 s: (-) Torque control curve – 1st version 1st speed rpm : 1100 Rack travel in m: 11.00...11.10 rpm : 950 2nd speed Remarks: Rack travel in m: 11.25...11.45 3rd speed rpm : 850 Rack travel in m: 11.75...11.95 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed LDW Pressure hPa : -Rack travel mm : 10.40...10.60 Measurement 1/min: 500 Speed 1st pressure hPa : 280 Rack travel in m: 10.80...10.90 2nd pressure hPa : 350 Rack travel in m: 11.40...11.60 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700

N26

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 4.30...4.40 : (4.25...4.45) Rack travel in mm : 9.00...12.00 Firing order : 6-2-4-1-5-3 Note remarks : MB 11,7 a 1 : 14.04.89 Test sheet Edition Replaces : 9.3.87 Test oil : ISO-4113 Phasina : 0-60-120-180-240-300 Combination no. : 0 402 046 751 Tolerance + - 0 : 0.50 (0.75) Injection pump Time to cyl. no. : 6 Pump designation : PES6P110A820LS3131 : 0 412 016 715 EP type number BASIC SETTING Governor Governor design. : RQ300/1100PA723 1st speed rpm: 1100 Governer no. : 0 421 801 265 Rack travel in mm : 11.10...11.20 Customer-spec. information Customer : DAIMLER-BEN7 Del.guantity cm3/: 14.0...14.2 : OM427H Engine 100 s: (13.7...14.5) 1st version kW : 177.0 Spread cm3 : 0.4Rated speed : 2200 100 s: (0.8) TEST BENCH REQUIREMENTS rpm : 300.0 2nd speed Rack travel in mm: 7.1...7.3 Test oil inlet temp. °C Del.quantity cm3/: 1.4...2.0 : 38...42 100 s: (1.1...2.3) Overflow valve Spread cm3 : 0.4: 1 417 413 025 100 s: (0.7) Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Control-lever position Overflow Degree: -2 quantity min. 1/h: 100...120 rpm : 550 Speed Rack travel in mm: 14.70...16.40 Test nozzle holder : 0 681 343 009 assembly FULL LOAD DELIV. AT FULL LOAD STOP Opening 1st version pressure, bar : 172...175 Speed rpm : 1100 Del.quantity : 140.0...142.0 1000 : (137.0...145.0) Test Lines : 1 680 750 015 Spread : 4.00 cm3 1000 ; (8.00) Outside diameter x Wall thickness RATED SPEED x Length mm : 6.00x1.50x600 1st version (A) Injection pump setting values Insp. values in parentheses Setting point: Set equal delivery quant. Speed rom

Rack travel in mm : 15.5

1st rack travel in: 10.20

rpm : 1140...1150

Testing:

Speed

N27

per values

Test pressure, bar: 25...27

BEGINNING OF DELIVERY

2nd rack travel in: 4.00

Speed rpm: 1175...1205 4th rack travel in: 1300

Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300 Rack travel in mm : 7.2

Testina:

Speed rpm : 100 Minimum rack trave: 8.80

Speed rpm : 300 Rack travel in mm : 7.10...7.30

Rack travel in mm : 2.00

Speed : 360...400 rpm

START CUT-OUT

1/min : 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600 Del.quantity cm3/ : 117.0...121.0 1000 s: (114.0...124.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.20

Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 130.0...150.0 1000 s: (126.0...154.0)

Remarks: